An assessment of the need for policy and regulation of OTT Communications Services in the ICT sector in South Africa

by

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Thesis presented in partial fulfilment of the requirements for the degree Masters in Public Administration in the faculty of Management Science at Stellenbosch University

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December 2019

DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third-party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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ABSTRACT

This research was conducted on the premise of exploring the need for policy and regulation for the over-the-top (OTT) communications services in the ICT sector in South Africa. ICT growth worldwide has led to the development of the Internet, which has further enhanced the evolution of digital application services. The global transformation of technology has brought many new providers in the ICT, tourism and transport sectors. In view of these radical technology changes, authorities are confronted with the challenge of ensuring that the playing field is level between OTT providers and traditional network operators.

However, the advent of OTT communications services has instigated uncertainty for other competitors in the ICT industry. In South Africa, traditional network operators voiced their concerns over the operations of OTT communications services. Hence in January 2016, the Parliamentary Portfolio Committee on Telecommunications and Postal Services held public hearings on the subject of OTT communications services. Key ICT players deliberated for and against the regulation of OTT technologies.

This study seeks to understand if there is a need for the government of South Africa to develop policy and regulatory outlines for OTT communications services. To this end, previous studies performed on the topic of OTT services have not sufficiently addressed the question of whether the country ought to develop such regulations. The available literature provides inadequate resolutions to policy and regulatory challenges occasioned by the emergence of OTT technologies.

The research was conducted by means of a qualitative research technique. The research comprised both empirical and non-empirical data collection methods. Primary data was collected by means of semi-structured interviews for the exploration and determination of fundamental areas of the study. The literature review revealed that the development of applicable policies and regulations for OTT communications services is a challenge to many countries worldwide. However, several countries are drafting legislation to resolve the impact of operations of OTT communications services in the ICT sector. For example, in Uganda in 2018, the authorities developed taxation guidelines for OTT applications. The current study revealed that it is not premature for South Africa to develop policy guidelines on OTT communications services. The study

further underscored the importance of developing policy guidelines on net neutrality. These regulations will assist the government in ensuring that all content and network providers, both OTT and traditional operators, are afforded equal opportunities to operate their communications services on the network. In addition, the study disclosed that authorities are required to review and/or develop policies on cybercrime and the protection of personal data. Lastly, the study indicated that aside from the objections emanating from traditional network operators, OTT technologies have brought significant benefits to the country, as virtually every South African citizen is in possession of a smartphone and has access to communications and internet services.

OPSOMMING

Hierdie studie ondersoek die behoefte aan beleid vir en die regulering van die intydse internetgebaseerde (IIG) kommunikasiedienste ("over-the-top communications services") in die inligtings- en kommunikasietegnologie (IKT) sektor in Suid-Afrika. Die groei wêreldwyd in IKT het aanleiding gegee tot die ontwikkeling van die Internet, wat gelei het tot die verdere evolusie van digitale toepassingsdienste. Met die globale transformasie van tegnologie het baie nuwe verskaffers tot stand gekom in die IKT-, toerisme- en vervoersektore. In die lig van hierdie radikale tegnologiese veranderinge word die owerhede gekonfronteer met die uitdaging om te verseker dat gelyke geleenthede gebied word aan IIG-kommunikasiedienste en tradisionele netwerkoperateurs.

Die bekendstelling van intydse internetgebaseerde kommunikasiedienste het egter gelei tot onsekerheid vir ander mededingers in die IKT-sektor. In Suid-Afrika het tradisionele netwerkoperateurs hul kommer uitgespreek oor hoe intydse internetgebaseerde kommunikasiedienste bedryf word. Om hierdie rede het die Parlementêre Portefeuljekomitee vir Telekommunikasie- en Posdienste openbare verhore gehou oor die onderwerp van IIG-dienste. Sleutelrolspelers het vertoë gerig ten gunste van en teen die regulering van IIG-tegnologie.

Hierdie studie ondersoek of daar 'n behoefte is vir die Suid-Afrikaanse regering om beleid en 'n regulatoriese raamwerk te ontwikkel vir IIG-kommunikasiedienste. Vorige studies oor IIG-dienste het nie voldoende aandag geskenk aan die kwessie of die land sodanige regulasies moet ontwikkel nie. Bestaande literatuur bied onvoldoende oplossings vir die beleids- en regulatoriese uitdagings wat na vore kom as gevolg van die ontwikkeling van IIG-tegnologie.

Die navorsing is onderneem deur middel van 'n kwalitatiewe navorsingsmetodologie. Empiriese sowel as nie-empiriese metodes is gebruik. Primêre data is ingesamel deur middel van semi-gestruktureerde onderhoude wat gevoer is ten einde die fundamentele studie areas te verken en te bepaal. Die literatuuroorsig het getoon dat die ontwikkeling van toepaslike beleid en regulasies vir IIG-kommunikasiedienste in lande regoor die wêreld 'n uitdaging is. Daar is egter bevind dat verskeie lande besig is met die opstel van wetgewing om die impak van die bedryf van IIG-

kommunikasiedienste in die IKT te reguleer. In Uganda, byvoorbeeld, het die owerhede in 2018 belastingriglyne ontwikkel vir IIG-toepassings.

Hierdie studie het bevind dat dit nie voortydig vir Suid-Afrika is om beleidsriglyne vir IIG-kommunikasiedienste te ontwikkel nie. Die studie beklemtoon die belangrikheid daarvan dat beleidsriglyne geformuleer word vir netwerkneutraliteit. Hierdie regulasies sal die regering help om te verseker dat alle inhouds- en netwerkverskaffers, IIG- sowel as tradisionele operateurs, gelyke geleenthede gebied word om hulle kommunikasiedienste op die netwerk te bedryf. Verder het die studie bevind dat die owerhede genoodsaak is om beleid rakende kubermisdaad en die beskerming van persoonlike inligting te hersien en/of te ontwikkel. Laastens dui die studie aan dat, ten spyte van die besware van tradisionele netwerkoperateurs, IIG-tegnologie beduidende voordele vir die land inhou, aangesien bykans elke Suid-Afrikaner 'n slimfoon besit en toegang het tot kommunikasie- en internetdienste.

DEDICATION

This thesis is dedicated with love and gratitude to my son and only child, **Tshiamo Mathibe**. First, let me thank the Almighty Father God for my stunning handsome young man, **Tshiamo.**

I know he is a gift from You, God. I love you, son, with all my heart.

May God's mercy, wisdom and grace be bestowed unto your life; may the Holy Spirit open the doors of opportunities in your life; may God bless you with success, prosperity, heath and protection.

Since, you were born, you have been my inspiration and have brought so much happiness into my life.

Thank you for loving me unconditionally,

Love **Mama**

ACKNOWLEDGEMENTS

"If God brings you to it, He will bring you through it "(Isaiah 43:18-19).

Exceptional gratitude to Jesus Christ, our Lord and Saviour. God`s love is amazing; always on time, always faithful, always with me, Amen.

A heartfelt appreciation to my loved ones:

- To my husband and best friend, **Jerry Brian Ramatlo**. Thank you for supporting me, from the beginning to the end of this journey. Your love and understanding have inspired me.

- To my **precious mother, Ida Masemola**. Your sacrifices made me the person I am today. Without your prayers and encouragement, none of this would have been a reality.

- To my dearest brother, and only sibling, **Brian Masemola**. Life is meaningful when it is filled with caring relationships. The best brother, father and uncle in the entire planet. Thank you, heavenly Father, that together we are the greatest.

- To my favourite uncles, **Steven Masemola** and **Raymond Masemola**, and my beautiful aunt, **Sylvia Malekane**. Thank you for loving and caring about my well-being since my very first day in this world.

- To my beautiful nieces. Thank you God for **Lehlogonolo** and **Zoe Masemola**. Rakgadi loves you to the moon and back. May the Almighty grant you success, safety and joy in every area of your life.

- To Ms. **Naomi Burger**, my mentor and supervisor. Thank you for your patience and helping me to complete this endeavour. My editor, **Dr Liz van Aswegen**, thank you for editing my thesis.

- To every person who has offered me the privilege to interview them in this process, I am truly grateful. A big thank you to all my fellow students. The support, inspiration and conversations we had during challenging times. May the Lord continue to bless you all as you pursue your future endeavours. **Shariffa, Joseph, Serrah, Khomotso, Juanita, Hlengiwe,** and **Ashwin** – let's continue to soldier on …

In memory of Martin and Adelaide Masemola, my late grandfather and grandmother. You will always be in my heart; your love and support will always be remembered. Thank you for raising me. Rest in peace ***Papa le Mma****!*

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ABBREVIATIONS AND ACRONYMS

CTO	Commonwealth Telecommunications Organisation
DoC	Department of Communications
DTPS	Department of Telecommunications and Postal Services
ECA	Electronic Communications Act, No. 36 of 2005
ECT	Electronic Communications and Transactions Act, No. 25 of 2002
EU	European Union
FCC	Federal Communications Commission
IBA	Independent Broadcasting Authority
ICASA	Independent Communications Authority of South Africa
ICT	Information and Communication Technology
IMDA	InfoComm Media Development Authority
ITU	International Telecommunications Union
MNO	Mobile Network Operator
NDP	National Development Plan: Vision 2030
OECD	Organisation for Economic Co-operation and Development
Ofcom	Office of Communications
OTT	Over-The-Top
PICC	Presidential Infrastructure Coordinating Commission
PMG	Parliamentary Monitoring Group
SADC	Southern African Development Community
SATRA	South African Telecommunications Regulatory Authority
SDGs	Sustainable Development Goals
SIP	Strategic Integrated Project
SMME	Small, Medium and Micro Enterprise
SMS	Short Message Service
Stats SA	Statistics South Africa
UAE	United Arab Emirates
VAT	Value Added Tax
VoIP	Voice Over Internet Protocol

CHAPTER 1:INTRODUCTION AND PROBLEM STATEMENT

1.1 Introduction

According to Fundación Telefónica (2016:7), information and communication technology (ICT) digital ecosystems have evolved significantly. ICT has accelerated the growth of the Internet as an innovative means of [1]communication. The Internet has thus caused a revolution in [2]communications services, giving rise to new applications such as email and web surfing. The transformation of ICT has generated technology modernisation, which resulted to the advent of over-the-top (OTT) communications services (Fowora, Awodele, Olayinka & Aduragbemi, 2018:1). Trubnikov (2017:402) asserts that the evolution of ICT has led to advanced digital communications applications. The emergence of OTT communications services has led to the growth of the ICT network system. As a result, the merging policy and regulations of ICT services is no longer formed through traditional sector descriptions (Digital Policy, 2015). However, regulation has an important role to play in advancing these inventive ICT digital communications services. Even more importantly, the International Telecommunications Union (2018) affirms that policy has the capacity to support the expansion of new innovative technologies for the benefit of the public.

Alinaghian, Rahman and Ibrahim (2011:968) further indicate that regulation has the capacity to promote ICT services and expedite the entrance of new service providers into the ICT market. Hence it is fundamental for policy makers and regulators worldwide to be cognisant of ICT developments for policy certainty and formulation of regulations. Darji, Mkwanazi and Njisane (2016:3) argue that OTT communications services require connection to the Internet to convey content to the consumers as the Internet is connected to the infrastructure preserved and maintained by mobile and fixed network operators. OTT providers in South Africa use the infrastructure of traditional network operators like Vodacom and MTN. OTT providers offer communications services like WhatsApp, Facebook, WeChat and Skype. According to Wang, Wei, Zhan and Sun (2017:79), the operation of OTT applications was made possible by internet growth in the current era of big data and cloud computing, often referred to as disruptive

[1] Communication involves individuals exchanging messages.
[2] Communications is a technology system for transmitting information e.g. telephone, TV and fibre optics.

technologies. The Commonwealth Telecommunications Organisation (2018) emphasises that the introduction of OTT communications services has revolutionised the ICT sector scenario. Nonetheless, in South Africa or in many other nations worldwide, these modernised communications services are not integrated in the ICT policy and regulatory context. Policy design and development of regulations only focus on current electronic communications services that comprise mobile cellular services and fixed telephone services (Fundación Telefónica, 2016:30). OTT communications services are modern innovations, made possible internet growth in the ICT sector (Fowora et al.,2018:1). This chapter discusses at length the problem statement, study design and methodology stemming from the problem analysis. The section below present the background to the study, the history of the Internet and its relevance to this study.

1.2 Background

Cave and Hatta (2009:488) argue that technology has grown vastly; fixed communications networks no longer dominate, while mobile communications are prevalent in the ICT sector. The development of the Internet has permitted service providers with electronic capabilities to connect communications services worldwide (Fuksa, 2013:42). In view of these radical technological changes, the question is whether governments are able to confirm that, is the playing field equivalent for all players in the ICT market? Blackman and Srivastava (2011) explain that the need to regulate communications services varies from country to country. Regulations in the ICT sector are designed and developed with the aim of establishing effectual ICT laws that can encourage fair and competitive commercial practices (Ofcom, 2010). In South Africa, the regulatory model that is in force and in many other countries such as Kenya and India, is modelled on traditional communications services (Damilola, Kalesanwo, Oludele & Vincent, 2017:15). Since the Internet is key to innovation within OTT communications services, the following section outlines the history of the Internet as an important enabler for OTT communications services.

1.2.1 The context of the Internet as an enabler of OTT communications services

Leiner, Kahn, Postel, Cerf, Kleinrock, Roberts, Clark, Lynch and Wolff (2009:22) note that in earlier years the only means of communication were telegraphs, letters and

telephones. During those years communications services were made possible by fixed-line networks used for voice communications. Cohen-Almagor (2011:46) states that in 1950 the United States of America (USA) carried out a study significant to the development of the Internet. The research was conducted to ensure that in remote areas [3]communications systems were maintained in case of incidents where electrically powered links were damaged. In the 1960s the USA conducted an experiment by connecting various machines to establish linkages of different communications systems (Keefer & Baiget, 2001:90). Cohen-Almagor (2011:49) further notes that by 1970 the Internet was capable of navigating multiple integrated communications services. The development of the Internet was followed by the World Wide Web in 1989, which improved the operation of the Internet extensively (Coetzee, Wilkinson & Krige, 2016:180).

These developments intensified the use of the Internet globally. Adding to these developments was the digitising of content, which contributed to the expedition of technology convergence (Gribbin, 2011:30). Indeed, technology transformation enhanced the promotion of new communications services, new players and business opportunities. The World Wide Web generated a comprehensive range of internet applications such as OTT applications (Baldry, Steingrover & Hessler, 2014:4). The following figure is an illustration of internet use around the world.

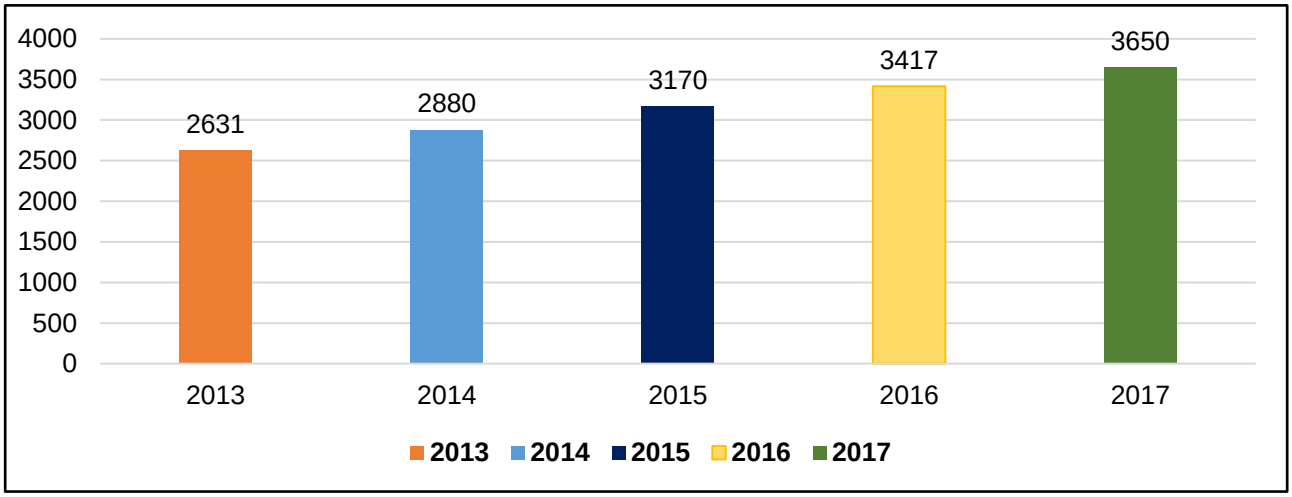


Figure 1.1: Global internet users from 2013 to 2017 in millions

Source: Statista, 2019f

[3] A communications system is a compendium of communications tools that is intergrated into a logical system.

The above figure represents the use of the Internet globally from 2013 to 2017, illustrating that internet use is growing. Thus in 2017 there were 3.650 billion users, from 3.417 billion in 2016 (Statista, 2019f).

1.2.2 Context of policy and regulation challenges since the introduction of OTT communications services

Since the influx of OTT communications services into the ICT sector, several studies have been conducted internationally on the subject. In 2015, Sujata, Sohag, Tanu, Chitan, Shubham and Sumit performed a study in India on the effects of OTT applications in relation to the services of conventional network operators (Sujata et al., 2015:145). In 2015 the European Parliament conducted research to evaluate policy challenges and competitions matters in regard to the OTT communications services in the European Union (Godlovitch, Kotterink, Marcus, Nooren, Esmeijer & Roosendaal, 2015:10). According to the Commonwealth Telecommunications Organisation (2018), in 2016 the Commonwealth ICT ministers' meeting instructed the Commonwealth Telecommunications Organisation (CTO) to conduct a research on legislation relative to the development of OTT communications services.

Guellec and Paunov (2018:23) assert that governments, regulatory institutions and role players are attempting to establish appropriate responses to resolve the challenges that have emerged since the start of OTT technologies. Brown (2014:366) contends that OTT applications should be incorporated into the broad spectrum of the ICT regulatory framework. Brown notes that it is not correct for OTT communications services to be completely unregulated. Policy and regulation of ICT communications services should be adjusted to correlate with current ICT services (Bundesnetzagentur, 2016). In doing so, ICT regulations will adapt to innovation and new technology. Governments and regulatory organisations should endeavour to confirm that competition is non-discriminatory for all market players. The studies above confirm that policymakers, researchers, and regulators are researching practical reactions to resolve the concerns that emerged in relation to OTT communications services. Indeed, this research has the significance of encouraging government and regulatory institutions in reassessing the legislative landscape.

1.3 OTT communications services: research problem statement

The introduction of new or different technologies is likely to cause uncertainties for other competitors offering more or less the same services. The popularity of OTT communications services without doubt created commercial anxiety in the ICT sector, particularly in matters of competition and public interest (Godlovitch et al., 2015:26). However, Ofcom (2010) indicates that electronic communications services are subjected to legal, policy and regulatory frameworks globally. Thus in 1987 the European Union (EU) instigated a process of legislative development on automated communications services. In 1998 the EU proceeded to enact guidelines on automated communications services (Tsatsou, 2011). South Africa similarly promulgated the Electronic Communications Act, No. 36 of 2005 for the management of automated communications services (Republic of South Africa, 2005). In addition, the Independent Communications Authority of South Africa (ICASA) Act, No. 13 of 2000 is authorised to develop regulations on automated communications services (Republic of South Africa, 2000).

Yaici and Sale (2016) state that OTT communications services gained prominence in South Africa between the years 2013 and 2014. However, since the emergence of OTT communications services there have been complaints from traditional network operators. They are dissatisfied that OTT providers are utilising their network systems without compensating for the use of the infrastructure. They maintain maintenance and upkeep of networks is costly, as noted in the Portfolio Committee of Telecommunications and Postal Services (2016) Parliamentary Monitoring Group. In addition, Robb and Ramkolowan (2016) mention that traditional network operators are obliged to conform with various regulations and laws which are enforced on their operations only and not on the operations of OTT providers. The traditional network operators are required to provide quality services to consumers and conform with national taxation obligations which exclude OTT providers. These concerns led to public hearings held by the Parliamentary Portfolio Committee of Telecommunications and Postal Services in January 2016. Key players in the ICT sector reflected on the discrepancies in regulations between OTT providers, mobile, and fixed network operators.

However, government acknowledged the concerns from significant role players in the sector pertaining to the regulatory inequality between traditional network operators and content providers (Portfolio Committee of Telecommunications and Postal Services, Group (PMG) (2016). Nonetheless, there was no evidence, nor were there reasons supporting the concerns raised during the public hearings. Hence the South African government firmly supported an approach of deferring the regulation of the OTT communications services. This is detailed in the National Integrated ICT White Paper, “Government is of the view that there is no need to immediately regulate OTT communications services, but this position should be regularly reviewed by the regulator” (Republic of South Africa, 2016a:117).

Therefore, this research pursues to explore, understand and assess the requirements for OTT services. In addition, the study will assess the nature of the proposed policy and legislation for OTT applications as informed by the outcome of the research. Even though the focus of the study is on OTT communications services, the study will also examine digital disruption in the broadcasting, tourism, e-commerce and transport arenas, since their operations correlate with OTT applications in the ICT sector, and because all services depend on the Internet for functionality. Moreover, the researcher wishes to underscore the significance of ICT as a tool that cuts across all sectors, as the world is currently embracing digital evolution.

1.4 Purpose of the study

Keivani, Parsa and Younis (2003:20) indicate that the use and penetration of and access to ICT can impact positively on a country`s economic growth. Hence, this study intends to ascertain and comprehend the relevant concepts, facts and knowledge pertaining to OTT communications services. The researcher intends to explore and analyse the research question to understand the policy implications of OTT communications services. Furthermore, by conducting the study, the researcher hopes to augment relevant theory on the topic of OTT communications services. The final goal in conducting this study is to accomplish a good, improved comprehension of the policy imperatives and regulations for OTT communications services (Commonwealth Telecommunications Organisation, 2018).

1.5 Significance of the OTT communications study

The research is conducted for the benefit of the South African population, since ICT is an important means of enhancing social interaction among communities. The Commonwealth Telecommunications Organisation (2018) indicates that research on the subject of OTT technologies is significant, since the outcomes of such a study can be of value to governments and regulatory institutions to ensure that the ICT sector is competently administered. The study should assist regulators and policy makers with ICT legislative mechanisms to respond to complex policy issues in the administration of OTT applications. Therefore, the study will serve as a point of reference in the ICT industry for government, regulatory authorities and role players.

1.6 Research question and research objectives

The research question is aligned with the research objectives.

1.6.1 OTT communications services research question

The research question which this study seeks to answer is: Is there a need for the government of South Africa to develop a policy and regulatory framework for OTT communications services? The researcher intends to explore and analyse the research question to understand the policy implications of OTT communications services.

1.6.2 Study objectives

This study focuses on the following research objectives:

- To describe the emergence of OTT communications services in South Africa and worldwide.
- To describe the existing ICT legislation and policy framework in South Africa.
- To explore the role of government in the application and adoption of OTT communications services.
- To conduct a literature survey on the application of OTT communications services.
- To provide possible policy guidelines and regulatory recommendations.

1.7 Research methodology and design

The following research methods are relevant to the study:

Exploratory research: The research is of an exploratory nature since the topic of OTT communications services is relatively new. The exploratory approach is appropriate to gathering the requisite information to respond the research question (Babbie & Mouton, 2001:79).

Qualitative research: Qualitative methodology should ensure that the topic of the research is viewed holistically (Babbie & Mouton, 2001:270).

Primary data: Data collection is by semi-structured interviews aided by an interview guide. The tools and processes are appropriate to answering the research question, as stated by Babbie and Mouton (2001:282).

Secondary data: Secondary data constitute academic journals, media reports, and regulatory and policy reports.

Population: The population of the study constitutes officials in the ICT fraternity in the public and private sector, and the end-users of OTT applications.

Non-probability sampling: This non-probability sampling method is appropriate to qualitative studies (Kumar, 2011:325).

Purposive sampling method: The study uses this method for the selection of the study sample. This allows the researcher to choose the participants of the study in accordance with the researcher's opinion and discernment (Tongco, 2007). Thus, ICT policy and regulation experts in both public and private organisations participated in the study. The study sample includes end-users of OTT applications, particularly those with knowledge of public affairs. Below is a detailed description of the population sample.

Group 1: ICT policy specialists from the Department of Telecommunications and Postal Services (DTPS) and the Department of Communications (DoC) for their understanding of ICT public policy, laws and legislation.

Group 2: Regulatory experts from ICASA, for their knowledge of ICT policy and regulation, expertise in protecting the interests of consumers, and proficiency in competition in the ICT sector.

Group 3: Economists from the Competition Commission of South Africa, a statutory body ensuring equity and fair practice within the economic sector. These economists

have expertise in performing market reviews in all economic sectors to assess competition conditions.

Group 4: Policy and regulatory experts located in the commercial sector who are involved with the administration of electronic communications services. The group further comprises officials with an understanding of key developments within the ICT sector, inclusive of OTT technologies. This group includes experts from Vodacom, MTN, Cell C, Telkom, Facebook, Google, WhatsApp and MultiChoice, and from the Internet Service Provider Association.

Group 5: Lastly, the study sample comprises end users, more specifically students from the University of Pretoria. Interviews attempt to elicit information on OTT communications services applicable to the public. For example, information on tariffs, access to ICT services, and security. Students that regularly use OTT applications are in a position to outline the benefits and challenges of OTT communications services(Kumar, 2011:176).

Content analysis: Content analysis is used for the research analysis. Relevant themes emanating from the literature review assist in the analysis of the study (Kumar, 2011:366).

Research ethics: The researcher adhered to the university's ethical principles when performing this study, ensuring that the participants of the study and their confidentiality were protected. Information solicited from respondents should not be inappropriately exploited (Kumar, 2011:218).

Notification to conduct the study: A notification has been attached by the researcher to conduct the OTT communications services research. The notification acquaints the DTPS, the researcher's employer, with the study and is attached as Appendix A as requested by the Stellenbosch University ethics committee.

1.8 Outline of the OTT communications services study

Chapter 1: Introduction and problem statement

This chapter provides an overview of and background to the research. It gives a detailed exposition of the problem statement, explains how technology has evolved and the context of how the Internet has developed worldwide. The chapter further illustrates how internet technology led to new technological applications such as OTT communications

services. Furthermore, the chapter outlines the study methodology, design, objectives and study question.

Chapter 2: OTT communications services: literature review

This chapter comprises the theoretical framework that correlates with OTT communications services. The chapter outlines the literature relating to the topic. It also discusses important concepts culled from a range of academic literature. In addition, the global context of OTT communications services is addressed.

Chapter 3: Policy and regulatory outline

This chapter deliberates on ICT legislation administering ICT policy and regulatory frameworks in South Africa. The chapter discusses global organisations delegated to develop ICT guidelines for developing and growing economies. It deliberates key ICT sector legislation promulgated in South Africa. Lastly, it outlines the country's national policy programmes for advancing the ICT sector.

Chapter 4: OTT communications services in South Africa

The chapter discusses the emergence of OTT communications services in South Africa and gives a synopsis of South African internet penetration. In addition, the chapter discusses the emergence of OTT communications services comprehensively to extrapolate their essence and growth in comprehending and refining the research problem.

Chapter 5: Research design, methodology and data collection tools

The chapter outlines the study methodology and design. It presents the sampling strategies and techniques for collecting primary and secondary data.

Chapter 6: Presentation and analysis of research results and findings

Chapter 6 discusses the outcome of the study and provides an analysis of the research results. It is essential to analyse the data collected to assess the research assumptions and resolve the research question to confirm that the research has been efficiently accomplished.

Chapter 7: Conclusions, summary and recommendations

This chapter summarises the discussions, concepts and arguments on the subject of OTT communications services. The chapter outlines the objective, method and

outcomes of this research. The study findings are discussed on the basis of the evidence collected from the research process. Finally, the chapter provides pertinent recommendations.

1.9 Summary

The world is embracing the digital revolution. The applications economy has changed the approach of telecommunications services. The Internet has transformed the ICT ecosystem globally. The aim of this chapter was to present the research subject, outline the study context, and provide a rationale for the choice of topic. The chapter further outlined the problem statement and presented an outline of the study design and methodology. A brief synopsis of the history of the Internet was provided since the Internet is significant to the development of OTT communications services. The internet revolution has heralded the emergence of new communications amenities in particular OTT communications services in South Africa. The next chapter discusses the literature review, and concepts and theories aligned to the research topic.

CHAPTER 2: OTT COMMUNICATIONS SERVICES: LITERATURE REVIEW

2.1 Introduction

The Internet as a constituent of ICT has facilitated innovative modes of transmitting information and communication. Hence, globally governments are building and improving infrastructure systems for the provision of new digital services (Smith & Elder, 2010:65). Equally important, the development of the ICT sector requires government to implement applicable ICT regulations. It is thus essential for policy makers and regulators to plan appropriate strategies, programmes and legislation for the management of both modern and traditional communications services(Gupta, 2015:196). Shin, Park and Lee (2016:329) disclose that the revolution of digital content has improved modes of communications. OTT communications services have enhanced communication among businesses, citizens, and governments. Gwena, Chinyamurindi and Marange (2018:1) indicate that OTT technologies have expedited the access of online content, hence the need for smartphones, mobile data and mobile applications is intensifying globally. More people are utilising OTT applications worldwide.

Deshmukh (2015:1) indicates that in 2015 WhatsApp had roughly 750 million users across the world. Deshmukh further reveals that monthly 20 million customers sign up for WhatsApp services worldwide. Hence Statista (2019b) indicates that internationally, WhatsApp subscribers increased by 1.5 billion in December 2017 from 1.2 billion in January 2017. The South African population also has embraced the data-applications world. As a result, the use of Facebook improved from 13.5 million in 2016 to 16.0 million in 2017 (Patricios & Goldstuck, 2018). Nevertheless, OTT communications services are relatively new and therefore scientific literature that is accessible on the subject is limited. The existing literature can only commend inadequate solutions to the disputes and impacts resulting from the introduction of OTT communications services. This chapter, therefore explore main theories underpinning the research and outline the global context of OTT communications services. The literature analysis intends to survey approaches and techniques which have been implemented worldwide on OTT communications services.

The intention of this literature analysis, is to outline previously conducted studies on the subject, consider global recommendations on policy and regulatory guidelines, and understand the obligation of governments in the implementation of OTT communications services.

2.2 Description of significant concepts

The next section focuses on a number of definitions important to the research. In the ICT sector, many concepts are explained in a variety of ways. The following concepts are discussed: OTT, internet, big data, net neutrality, electronic communications services, and cloud computing.

2.2.1 Information and communication technology (ICT)

According to Zuppo (2012:13), there are several descriptions of ICT. Cohen, Salomon and Nijkamp (2002:35) define ICT as a unit of applications and resources that are utilised to administer and broadcast data to the general public. Perron, Taylor, Glass and Margerum-Leys (2010:67) describe ICT as the tools applied to transmit, manoeuvre and gather information electronically over different devices, such as computers, tablets and smartphones. Schech (2002:13) defines ICT as an impartial network for transmitting information. ICT is also termed the combination of technology to transmit data and information (Ayanso, Cho & Lertwachara, 2014:60). Further, ICT is defined as the operation of electrical machines for gathering and distributing data (Nisar & Osman, 2017).

Asabere and Enguah (2012:62) define ICT as devices and techniques that offer a tangible structure for the facilitation, invention, programming, and management of information. The structure comprises voice, content, data and audio-visual ICT services. ICT is further defined as an innovative system developed for the purpose of storage, investigation, exchange, and programming of information (Parvez, 2011:2). Abayai (as cited by Oni, Raji, Olayiwola, Adeniran & Fasasi, 2013:1) asserts that ICT is a massive network system which comprises worldwide, or countrywide high-speed connections offered to citizens for the transmission of information. In conclusion, when assessing the above definitions, it becomes clear that ICT has significantly stimulated technology development. Therefore, the above definitions confirm that ICT has enabled the growth of the Internet that has led to the expansion of OTT communications services.

2.2.2 Internet

Kahn and Cerf (1999:11) define the Internet as a collective of information which takes account of innovative practices and applications. This definition underscores that the Internet is an integral component of ICT as a global processer of information. Franklin (2015:741) describes the Internet as an organisation of unified systems that utilises distinctive techniques for the connection of various technology appliances around the world. Franklin contends that the Internet is a huge construction with various dimensions for connecting electronic machines across the world.

The Internet is a digital mechanism which can capacitate technology systems to transport information and is a structure that permits data to be interconnected over a widespread technology structures (Republic of South Africa, 2002a). According to Clark (2017:1), the Internet is a communications tool intended to link computers concurrently for the purpose of interchanging digital data. Clark considers the Internet to be a reference point in offering fundamental communications services and describes it as a system that conveyances elements of information to one or more computer points from the main computer server.

Dutton (as cited by Abbate, 2017:8) considers the Internet to be a primary system that supports the provision of automated communications services. Wikipedia (2019b) defines the Internet as a multinational organisation that includes societies and organisations from national to international states. The above definitions, when analysed, imply that the Internet has competence to link technological appliances from all over the world Hence the Internet is considered a primary structure for the development of technological applications and services (Daigle, 2015:1). Thus, the Internet is an fundamental component of this research, as the development of OTT communications services has depended on the development of the Internet.

2.2.3 OTT communications services

In an exploration of the literature, various interpretations of the term ‘OTT communications services’ were found. The Body of European Regulators for Electronic Communications (2016) describes OTT communications services as a component of technology which is diffused across the Internet infrastructure and distributed to the consumer. Baldry et al. (2014:4) argue that OTT communications services are facilities

which utilise the Internet for the purpose of transmitting telecommunications amenities. In addition, Fowora et al. (2018:17) define OTT as the diffusion and distribution of audio-visual or any mass media content on the network. The content is transmitted by means of the Internet, without authorisation from traditional network providers. Sudtasan and Mitomo (2016:3) note that OTT services are electronic facilities transmitted over networks preserved by traditional network operators.

Green and Lancaster (2006) contend that the phrase should be applied to all electronic services conveyed over the Internet. OTT providers offer these services to consumers without involving traditional network operators in the design, marketing and distribution of the services. Enriquez and Calderon (2016:1) refer to OTT communications as multimedia technology applications services which are conveyed to consumers. OTT providers dispense OTT multimedia services through infrastructure systems maintained by traditional network service providers. Matichon (as cited by Kakhai, 2018), notes that OTT communications services are a configuration and production of media and voice services invented for the public, such as WhatsApp and Viber.

Bilbil (2018:102) defines OTT as innovative technology applications for delivering communications and content streaming services. The word ' OTT ' derives from the concept that OTT facilities sidestep standard network systems and function over the primary internet framework that traditional network providers have maintained and preserved (Commonwealth Telecommunications Organisation, 2018). Table 2.1 overleaf describes different categories of OTT communications services as outlined by the Telecommunications Authority of Trinidad and Tobago.

Table 2.1: Categories of OTT communications services

OTT Category	Images	OTT applications
Communications		Skype, WhatsApp, WeChat, Google Voice, Line Skype, Talkatone, Viber Messenger and Telegram
Broadcasting		Netflix, YouTube, Spotify, Apple TV and Google TV
Social/Public		Facebook, LinkedIn, Instagram, Twitter, Pinterest and foursquare
Cloud Technology		iCloud, Amazon, Microsoft, Rackspace and Dropbox
Intermediation Applications		Uber, Taxify and Airbnb
Music		iTunes, Cloud Player, Deezer and Pandora
e-Commerce Applications		E-wallet, Takealot and bidorbuy

Source: Telecommunications Authority of Trinidad and Tobago, 2015

The above table classifies the OTT communications services accessible to the general public across the world. When considering the definitions of OTT communications services discussed above, it is evident that these applications require the Internet for the operation of their services.

The Body of European Regulators for Electronic Communications (2016) reveals the significant role of the Internet in the application, transmission and operation of OTT communications services. Therefore, the researcher adopts the following definition of OTT communications facilities for the purposes of this research: OTT communications services are amenities offered to end users by means of the Internet, and the facilities are comparable and related to the services offered by traditional network providers. Even though the operational models of OTT providers and traditional network providers are diverse, the researcher has opted for this definition as it complements the subject matter under investigation.

2.2.4 Electronic communications services

Brown (2014:359) argues that since OTT communications services are not incorporated in various regulatory contexts across the world, it is uncertain whether these services should be classified as electronic communications services or public data services. Nonetheless, Brown is of the notion that OTT communications services contain both components of electronic communications services and public data services. The Body of European Regulators for Electronic Communications (2016) defines electronic communications as services offered in exchange for payment. These services comprise the transmission of digital communications systems.

Electronic communications services are automated communications facilities that are transmitted through automated communications systems for the public to exchange communication (Republic of South Africa, 2005). For the society to operate these electronic services, they require electronic devices, predominantly computers, smartphones and tablets. The Information Commissioner's Office (2018) defines electronic communications services as any form of service that permits citizens to distribute electronic data. Similarly, the European Consumer Organisation (2017:3) notes that this term encompasses the services that enable consumers to transmit messages through electronic devices.

2.2.5 Big data

European Commission (2017), state that the concept of big data has evolved from the increase in information on network systems. Moreover, there are more digital links from individuals, and private and public commercial entities. Mary and Arockiam (2015:119) reveal that the structure of electronics has allowed for the gathering, storage and administering of public information. Huge establishments are receiving huge revenues for the management of public information. Facebook and Google are some of the recipients of such practices (Marr, 2014).Rathore, Paul, Hong, Seo, Awan and Saeed (2018:601) note that the concept of big data does not uphold or maintain an absolute recognised definition. However, the authors describe big data as a system with the following important qualities: loads of capacity, speed and variation. Purcell (2013:1) refers to big data as a system utilised for the assessment of huge data and facilitated and incited by the technological revolution. Purcell indicates that big data requires

immense and resourceful hardware systems for production and implementation. Again, big data is defined as a massive bulk of information which is impossible to administer in a conventional mode (Suh, Vujin, Barac, Bogdanovic & Radenkovic, 2015:A27). Big data encompasses a huge bulk of information which possibly is essential for further use (Sravanthi & Reddy, 2015:4629).Siemens and Long (as cited by Maltby, 2011:9) define big data as an information warehouse whose capacity is bigger than that of a normal information warehouse in terms of storage, analysis and applications.

Maltby (2011) is of the view that big data is not only concerned with information, but also with the administration of such data. To conclude, as technology evolves, more organisations are constantly generating vast amounts of information. Hence corporations such as Amazon, Google, and Microsoft are providing the necessary mechanisms for the administration of big data. As illustration, in 2012 Walmart roughly oversaw 2.5 petabytes of information every hour of each day, while Google has administered approximately 24 petabytes of information hourly on a daily basis (Davenport et al., as cited by Ridge, Johnstone & O'Donovan, 2015).

2.2.6 Cloud computing

Bera (2016:101) notes that in ICT, the use of the term cloud computing is "trendy"; however, the concept of 'cloud' is still confusing. According to Seixas (2015), cloud computing is a key stimulator for OTT communications services. Cloud services constitute a depository of digital content accessible from any machine and at any place. Zanoon (2015:17) describes cloud computing as a resource that provides electronic storage. Email is a model that demonstrates the concept of cloud computing. Users of email use the cloud for storing messages, although this resource is not located on the user's computer but is located at a location unfamiliar to the user (Huth & Cebula, 2011).

Zbakh, Bakhouya and Essaidi (2017:1) state that cloud computing is a compilation of amenities and appliances that permits operators to utilise the facilities. The term is further defined as a mode that supports technology systems in a consortium for the development and publicising of digital content with fewest administrative struggles (Zhang, Cheng & Boutaba, 2010:7).Cloud computing is further explained as a structure established for the management of technology services (Sareen, 2013:533). Cloud computing is also referred as an imperative driving force of content on any gadget,

device or computer. (Taylor, 2013). More importantly, electronic smart gadgets with the latest technology are eminently suited to the use of cloud services (Alghabban, Salama & Altalhi, 2017:160). Alzahrani (2016) reveals that multinational institutes such as Amazon and Microsoft provide their clients with facilities for cloud computing, while Baldry et al. (2014) indicate that the conception of cloud computing is of concern to governments, since the providers of cloud services are generally located in foreign countries. This challenge therefore necessitates countries to devise harmonisation strategies with the providers of cloud services.

2.2.7 Network operator

Taylor (2013) describes network operators as organisations that possess authorisation to operate network systems. They are responsible for the installation of network machines and confirming that these network machines are adequately functional with the necessary software (Pujol, Elayoubi, Markendahl & Sahaldin, 2016:113). A network operator is an institution that provides customers with telephone and SMS facilities (Mpwanya & Van Heerden, 2016:2).

Saadat and Soltanifar (2014:170) define a network provider as a supplier of infrastructure connections for the operation of internet and telecommunications services. Network operators provide consumers with data services for connection onto the web system. Furthermore, network operators are the managers of mobile and fixed networks and their primary objective is to guarantee that networks are efficient and optimal for all data traffic (Bradai, Singh, Ahmed & Rasheed, 2017). On the whole, a network operator is an establishment of telecommunications operators that supply the commercial sector, governments and consumers with internet, voice and SMS services (Body of European Regulators for Electronic Communications, 2016).

2.3 The significance of policy and regulation in the ICT sector

Alinaghian et al. (2011:965) refer to ICT policy as a guideline which is implemented by countries with the objective of growing the ICT sector. They indicate that ICT guidelines are developed with the aim of enhancing ICT usage and access for the public. Authorities ought to develop ICT guidelines that are innovative and inventive, since ICT is ever evolving. Hanna (2018:4) indicates that governments across the world are challenged with instituting apposite policies that align with new digital applications.

Hanna reveals that the development of ICT and the production of big data necessitate agility of strategies, policies and regulations. Furthermore, the Centre on Regulation and Competition Institute for Development Policy and Management (2004) explains that policy and regulation are significant for governments to consistently oversee the conduct and actions of private institutions. McDowell (2001:297) asserts that ICT policy is a mechanism used by governments internationally and nationally to outline, develop and implement laws in the sector. Legislation is a government tool that ensures that strategic plans of governments are achieved.

Therefore, policy and regulation are government mechanisms for encouraging unbiased competition in the ICT industry (Nicol, 2003).Thus Gillward, Moyo and Stork (2012:12) indicate that lack of government policy can result in ICT markets that are uncompetitive, with ineffective regulatory systems. Policy makers logically view regulation as an important and considerable intervention tool in ensuring that practices of monopoly are non-existent. Parcu and Silvestri (2014) indicate that regulation is imperative, since regulation compels the growth and expedition of informed policies so that government can offer reliable ICT technologies for the public. Regulation is also intended to attend to challenges that may arise in the ICT industry and address them effectually (Blackman & Srivastava, 2011).

Therefore, growth in the ICT sector necessitates applicable strategy and regulatory principles. In several nations, policy and regulation in the communications sector are essentially effected where market failures are evident (Szkudlarek, 2014:77). However, since OTT communications services is among contentious topics in the present legislative setting, it is imperative for countries to review legislative policies for communications services (Baker McKenzie, 2016). The section below discusses the effects and benefits of OTT communications services.

2.4 Effects of OTT communications services

Kittl et al. (2016:9) state that OTT communications services have resulted in substantial growth in the ICT industry. The OTT market globally was valued at approximately 700 billion euros in 2015. According to the International Telecommunications Union (2017a), OTT communications services have boosted economic growth in many nations. The services have been beneficial to numerous economic sectors, from small businesses to

large enterprises. Companies are able to access markets with ease, nationally and internationally. These services do not offer only a simple means of communicating, but have other features (for example, WhatsApp has the option of video calling (International Telecommunications Union, 2017a).

The applications thus have various interacting benefits for users, since they are able to track the location of people and organisations while using OTT applications. This function can be perceived as a substitute for the outdated telephone directory (Rao & Prasad, 2018:154). Fowora et al. (2018:19) state that OTT communications services have given end users access to internet services at lower tariffs. For instance, the roaming tariff in the United Arab Emirates (UAE) when using the services of a network provider based in the United Kingdom was £3 per minute in 2017. However, when using OTT applications, end users can access Wi-Fi spots and save on roaming bills (Wild, 2018). While using OTT applications, end users can make phone calls by dialling the name of a person rather than the number, which is unique and easier for users (Esselaar & Stork, 2018:4). Furthermore, OTT communications services, in advancing the digital economy, have brought economic prospects for societies globally. The development of OTT communications services has contributed to improved mobile broadband services. Smartphones and tablets are the prime forces influencing the growing demand for OTT applications (Mnakri, 2015).

Gijrath (2017:177) argues that regulation in ICT is implemented to avert unfair competitive practices. Since the advent of OTT applications, there have been concerns of regulatory imbalance between OTT and traditional communications services. Bhawan (2015) states that traditional network operators are mandated to regulatory requirements, while OTT providers are not subjected to any laws. Liu and Huang (2017) assert that indeed from a government perspective, the operations of OTT applications and traditional service providers equally induce certain public policy concerns. In the main, public policy issues likely to be at the core, comprise the following: the role of government in policy and regulation, consumer affairs, net neutrality and cyber security (McDowell, 2001:298). The section below discusses the effects posed by OTT communications services operations in the ICT sector.

2.4.1 Equality in the playing field for all players

The concept of equality for all players implies that guidelines, laws and regulations should be designed equitably for all players in the ICT sector to stimulate innovation and competition (Fundación Telefónica, 2016:15). However, the rapid growth of the internet industry has generated regulatory disproportion. According to CUTS International (2018), the challenge of the level playing field exists in many sectors and not only in the communications sector. For example, the new disruptive technologies in the broadcasting, tourism and transport sectors have militated against the players in those sectors.

The commercial prototypes of traditional service providers are governed by regulatory conditions, while the commercial prototypes of OTT providers are not dependent on regulation (Baldry et al., 2014: 7). Williamson (2016:20) indicates that all traditional communications services, either fixed or mobile, are compatible. In essence, anyone in possession of a mobile or fixed telephone can interact with others who are also in possession of a mobile or fixed telephone. However, OTT applications are not compatible, and interaction among Facebook and WhatsApp applications is impracticable.

Williamson further indicates that number porting is subject to regulation. This is a system that enables customers when moving from one service provider to another to maintain their mobile or fixed telephone numbers. Graef (2015:503) notes that end users are not required to port telephone numbers when using OTT applications as they are capable of accessing and using several OTT applications on one smartphone. According to Bhawan (2015), traditional network operators are mandated to comply with universal service commitments in accord with their licence agreements. However, OTT providers are not required to abide by any regulatory commitments.

Kittl, Ruhle and Reichl (2016:17) also affirm that a level playing field implies that network operators providing similar communications services in terms of functionality ought to be bound to similar regulatory prescripts. When such services are treated differently in terms of the law, it can result in unfair competition (Body of European Regulators for Electronic Communications, 2016).To conclude, governments will be perceived as non-discriminatory when imposing equivalent or somewhat similar regulatory guidelines to

both OTT providers and traditional network operators (Information Technology Industry Council, 2017). Overleaf is a tabular comparison of the services provided by traditional network providers and OTT providers, subjected and not subjected to regulation.

Table 2.2: Comparison of regulated and non-regulated communications services

Focus area	Traditional network providers	OTT providers
Markets	Their markets are situated in countries where they are subjected to regulatory prescripts.	Their markets are situated all over the world and they are not subjected to regulatory prescripts.
Security requirements	They are required to comply with security requirements, such as unlawful interception of telephone calls.	OTT providers are not mandated to conform to security laws of countries.
Network neutrality	Traditional operators are required to offer conveyance on the network equally without any discrimination.	OTT providers are not mandated to comply with network neutrality requirements. However various countries, such as Chile, have implemented guidelines (Kamal, 2016).
General sector regulations	Operators are compelled to provide quality of service and comply with interconnection regulations and consumer protection.	OTT providers are not required to comply with industry regulations.
Data privacy	Operators are subjected to end user data and privacy obligations.	The European Union has approved guidelines on data privacy laws, while Tanzania and Pakistan are in the process of drafting the law (Consumers International, 2018).
Country obligations	Traditional network operators are required to comply with the licence and taxation rules.	In South Africa, tax implementation on media corporations offering OTT applications was effected on 1 April 2019, while in other areas there are limited tax and licence obligations (De Villiers, 2018). Uruguay and Costa Rica are still debating on taxing OTT providers (Babbar, 2018:29).

Source: Bhawan, 2015

Table 2.2 above presents the regulatory disparity between traditional network operators and OTT providers (Bhawan, 2015). It indicates that some countries, such as South Africa, are developing regulatory guidelines on taxation directed at the operations of OTT providers. However regulatory disparity among OTT and traditional service

providers is still visible as shown above, since traditional network operators are obligated to conform with regulations on interconnection, while OTT providers are not mandated to abide by any regulations for the operation of OTT applications.

2.4.2 Description of electronic communications services

The Body of European Regulators for Electronic Communications (2016) argues that authorities ought to ascertain whether OTT applications should be designated as electronic communications services. Since OTT applications offer similar or comparable communications services, it has become problematic to interpret the description of electronic communications services since it is uncertain which OTT applications are covered by the definition (Fowora et al., 2018:4).

2.4.3 Internet neutrality aspects

Belli and De Filippi (2014:10) explain that internet neutrality specifies that all web activities over the networks ought not be segregated but be given similar opportunities to operate their services. OTT applications have increased network traffic, which impacts on the operations of traditional service providers. Internet traffic, regardless of its features or applications, should be considered in similar manner irrespective of the transmitter or the recipient. Belli and De Filippi contend that the principles of net neutrality relate specifically to online internet services. Galpaya (2017:5) states that in essence, OTT applications are associated with the notion of net neutrality, since the existence of OTT is dependent on the principle of open internet. Nike (as cited in the Nigerian Communications Commission, 2017), mentions that internet neutrality is a regulatory philosophy which disregards any practices of unfairness with respect to broadcasting and accessibility of ICT content. It is therefore imperative for appropriate legislative prescripts to be developed to confirm that network providers do not limit or strain internet traffic on their networks (Marsden: 2016:2).

Audibert and Murray (2016:127) indicate that the principle of internet neutrality encourages competition, since end users are afforded the opportunity of choosing services that interest them. Leal (2014:506) mentions that the net neutrality concept resolves glitches of traffic on network systems. To evade traffic congestion, network providers tend to select the content they allow on their networks. In certain occurrences, traditional network operators give priority to certain online services providers, creating

problems for end users (Belli, 2016).As a result, the Internet should be conserved as an open platform, for network and content service providers equivalently without discrimination (Pallero & Chima, 2017). The discussion above reveals the fundamental challenges of public policy as a result of internet operations of all providers. A balanced policy is required to ensure that all network operators are not dysfunctional, particularly towards content providers, thereby harming consumers (Peha, 2006:2).

2.4.4 National security

Kuhn, Walsh and Fries (2005:3) argue that new applications transmitted over the Internet can bring a positive economic, as well as numerous security threats for a country. Since OTT applications depend on internet linkages, these applications may cause interference, prying and online fraud, owing to an increase in online traffic. Damilola et al. (2017:15) argue that governments worldwide face various cyber security challenges with considerable internet traffic from international and national operators. Dawson and Nuñez (2018:177) contend that countries such as the Dominican Republic have suffered extensive cybercrime threats because of technology expansion.

Gerke (2014) asserts that countries are vulnerable to risks, particularly in respect of confidential national information transported via the Internet. This refers to data which governments request citizens to refrain from transferring or communicating. Furthermore, governments are concerned with the security and safety of consumers identity information. The identities of citizens can be easy to access and use for cybercrime; hence the importance of governments in implementing innovative technology systems that can detect cybercrime, such as surveillance instruments to monitor information transmitted on the Internet (Fowora et al., 2018:19).

2.4.5 Territorial dynamics

The International Telecommunications Union (2017a) indicates that it will be problematic to regulate OTT services since OTT applications convey borderless digital content. OTT providers are not required to reside in the countries where they offer their operations. Hence Facebook and Google originate from the USA, even though these OTT applications are worldwide. End users access OTT communications services through the Internet, regardless of their location. There are various approaches which

governments can take for the development of effective OTT applications regulatory frameworks (Asia Internet Coalition, 2015). Governments may establish national regulations that mandate OTT providers to set up infrastructures in countries for the operation of OTT applications. Therefore, authorities need to determine the nature and method of regulation. For example, governments need to ascertain whether services should be subjected to regulation in the country of origin or in the countries providing OTT services. However, implementation of local laws would require OTT providers to abide by a variety of legislative regulation from many countries, since their operations are worldwide (Rossi, 2014:15).

2.4.6 Effect on consumers

The Telecommunications Authority of Trinidad and Tobago (2015) state that, OTT applications have brought several benefits to consumers. OTT applications such as WhatsApp, Facebook, and Skype have become popular since communities increasingly prefer to use OTT services rather than traditional telephone calls and SMS. Skrbic, Dervisevic, Musovic, Hebibovic and Kasumagic (2014) indicate that consumers choose to use OTT applications as access to information is relatively easy, and as they are able to receive news and other data on their devices. Furthermore, people regard OTT communications services as a suitable choice as they permit people to reach one another irrespective of their whereabouts (Sujata et al., 2015:149).

Nevertheless, the Body of European Regulators for Electronic Communications (2016), state that OTT applications lack emergency call features compared with traditional network operators. Traditional operators have emergency telephone numbers which allow subscribers to call emergency services such as fire and police services. Furthermore, since the operation of OTT services depends on internet access, in areas where internet connectivity is weak, there might be poor connectivity that affects the quality of OTT applications. Consumers therefore cannot lodge grievances against OTT services with the regulatory authority, since these services are unregulated (Postal and Telecommunications Regulatory Authority of Zimbabwe, 2016).

2.4.7 Effect on governments

The Information Technology Industry Council (2017) maintains that governments are confronted with concerns of lost revenue, maintenance of infrastructure, and broadband

rollout owing to the operations of OTT communications services. Globally the objective of governments is to ensure that the society have the right to broadband facilities and are able to access and utilise the Internet. However, Baldry et al. (2014:14) note that OTT applications have resulted in governments losing revenue as OTT applications are mostly provided by international service providers rather than national corporations. Baldry et al. (2014) indicate that governments suffer loss of revenue, as OTT providers are not taxed in the countries where they operate. In such countries, governments cannot recover lost revenue as a result of non-payment of taxes. Capital is transferred from countries of operation to countries of residence. In addition, Tumu and Medudula (2014) reveal that OTT providers are not compelled to adhere to licensing fees regulations, and as a result, governments forfeit earnings. There are no explicit benefits resulting from the operations of OTT applications, for example, employment opportunities for the public. Bhawan (2015) indicates that governments have not recognised the economic impact of OTT applications in stimulating business opportunities.

2.5 The role of governments in the application of OTT applications and probable policy and regulatory guidelines

Governments globally are planning, reviewing and analysing appropriate approaches to confront policy issues relative to the application and implementation of OTT communications services. The section below addresses various policy and regulatory options which governments can implement for the administration of OTT communications services.

2.5.1 Review the definition of electronic communications services

Rossi (2014:12) contends that authorities globally need to assess the definition of electronic communications services for alignment with new digital applications. An endorsed description is essential for all communications services. Governments ought to review the current definition of electronic communications services for the definition to include the phrase ‘digital services’. Such an amendment will accommodate OTT communications services. According to the Body of European Regulators for Electronic Communications (2016), it is imperative for authorities to distinguish which OTT applications are eligible to be classified as electronic communications services.

Brown (2014:359) notes that authorities are required to establish the possibility of merging OTT applications with the current definition of electronic communications services. Governments ought to develop appropriate contexts to confirm whether OTT providers should be categorised either as electronic communications service providers or as applications service providers (Bhawan, 2015). This contradiction generates a certain level of ambiguity, particularly for end users, and this ambiguity can cause negative regulatory consequences when left unattended.

2.5.2 Preserve the current position

The *Economic Times* (2018), asserts that OTT applications do not have similar functionality modes when linked to the services offered by traditional network providers. Therefore, governments globally should refrain from regulation of OTT services since such regulation can impact adversely on technology innovation. Aulakh (2017) states that the distinction between traditional network service operators and OTT service providers is that the authorities allocate benefits such as [4]spectrum to traditional operators; however, OTT providers are not eligible for such benefits. Kittl et al. (2016:9) indicate that since OTT applications are still fairly new, enforcing regulations at an early stage appears biased. Rather governments should maintain the current regulatory stance. Governments should intervene only where evidence exists that OTT applications produce undesirable consequences and thus impact negatively on public policy intentions. Rossi (2014:8) contends that governments should rather observe the market before developing regulations. Furthermore, governments may possibly want to review the prospect of self-regulation for OTT technologies (Stork, Esselaar & Chair, 2017).

2.5.3 Introduce collaboration models

According to the Body of European Regulators for Electronic Communications (2016), OTT providers and traditional network operators are gradually collaborating. Even their partnerships are formed beyond the regulatory frameworks. The reason for the formation of such partnerships is that OTT providers and traditional network providers regard each other as partners. Again, both providers regard themselves as offering

[4] Frequencies used to transmit sound and data to phones

automated services to the public and not competing with each other for business. Joshi, Dalal, Egbert and Chaudhary (2016:25) indicate that such partnerships can be beneficial to traditional network operators, assisting them in accumulating greater data profits and new customers. Governments could develop collaborative techniques that accommodate equally the OTT providers and traditional network operators. This ought to ensure that service providers agree on the conditions of infrastructure use among themselves. However, Baldry et al. (2014) contend that, the development of partnerships between local operators and international OTT service providers will be challenging for regulators.

2.5.4 Implement regulation only for authentic public policy purposes

According to Stork et al. (2017:6), the objective of governments in regulating OTT applications ought to be in the public interest. Governments should ensure that competition is reasonable and fair. The operations of all services providers should be conducted equitably, without monopoly. Hanna (2018:4) states that governments, when developing regulations in this digital arena, are required to evaluate carefully probable negative implications for public affairs. For example, the pricing of OTT services is not transparent compared with services provided by traditional service operators. Therefore, when recommending regulation, governments should confirm that regulation contributes positively to digital growth and innovation. Kamal (2016) concurs that an informed review is required to establish whether the present laws are not sufficient to realise government objectives. Authorities should establish which categories of OTT applications require regulation. For instance, regulation can be developed solely for taxation and data protection, and not for collaborative approaches (Information Technology Industry Council, 2017).

2.5.5 Prohibition or blockade of OTT communications services

Governments can establish policy and regulation guidelines for the prohibition or blockade of OTT operations. However, according to Liu and Huang (2017), for any country, blocking or prohibiting OTT communications services is not an appropriate option. Liu and Huang indicate that blocking OTT applications may steer OTT providers to operate in a covert manner and also increase government security challenges. In addition, traditional network operators could decide to reduce the traffic of the OTT

providers. The Telecommunications Authority of the Kingdom of Bahrain (2016) asserts that this strategy of prohibition or embargo of OTT communications services can only be effective if all traditional network operators enter into an agreement to implement the strategy. The variances in commercial practices among OTT providers and traditional network operators may lead to conspiracy, and some players could dominate the ICT industry. Blocking services could bring about provisional relief to traditional network operators, particularly in the perspective of competitive pressure and decreasing returns. However, blocking OTT communications services could also be perceived as a unfair commercial practice, specifically from the customer's perspective (Stork et al., 2017). Figure 2.1 presents countries that have disrupted or blocked OTT applications. Required to abide by any regulations for the operation of OTT applications.

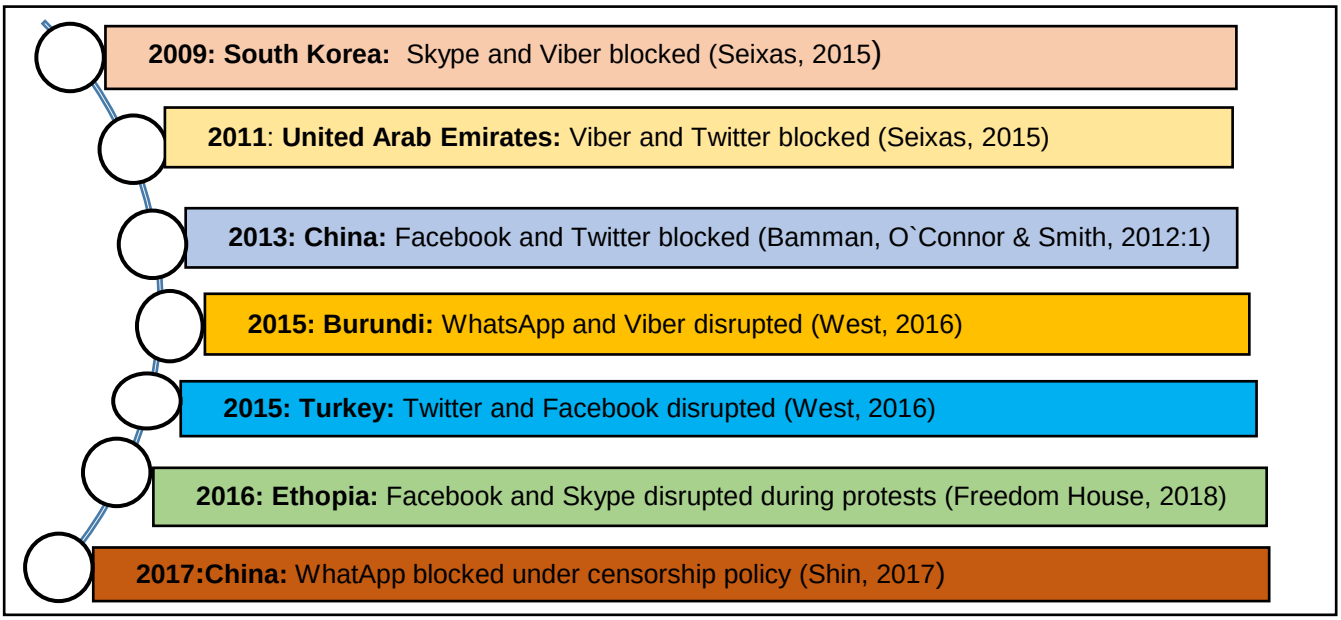


Figure 2.1: Countries where OTT applications are disrupted or blocked

Source: Kamal, 2016

In the United Arab Emirates and South Korea, OTT applications were blocked in 2015. In Ethiopia OTT applications were disrupted during protests in the country in 2015, and in 2016 Turkey also disrupted Twitter and Facebook.

2.6 Global context of OTT communications services

This section discusses processes and approaches of various countries in response to the challenges of OTT communications services. Baldry et al. (2014) and Godlovitch et al. (2015) note that OTT communications services have developed immensely and have

also confronted mobile network operators services. In the European Union, predominantly in Finland, merely 13 percent of households were still utilising fixed telephones in 2015. Over recent years, the use of fixed lines has declined significantly. A study conducted by the European Union in 2015 revealed that 72 percent of Europeans use mobile devices to receive or to make calls, and 37 percent use online internet facilities to make telephone calls. Furthermore, only one-third of residents in Spain and the Netherlands did not use internet applications (Godlovitch et al., 2015). This section discusses the context of OTT communications services in Kenya, Uganda, India, Thailand, China, Brazil, Singapore, the United Arab Emirates, the European Union, the United Kingdom, and the United States of America.

2.6.1 Context of OTT communications services in Kenya

Chesula and Kiriinya (2018:2) note that Kenya has experienced significant ICT growth in recent years. In 2015, internet access was estimated at 87.7 percent and at 89.2 percent in 2016, which reveals that use of the internet is growing. Sawe (2016:379) mentions that data users intensified from 23.7 million in 2015 to 24.7 million in 2016. The citizens of Kenya prefer OTT applications such as WhatsApp and Facebook for communication. The use of smart devices in Kenya is also on the rise: in 2015, approximately 150 000 smart cell phones were acquired each month. According to Article 19 (2018), the authorities in Kenya have instituted new online content rules. The government mandates that each member of society intending to transmit any media content through smart devices should apply for a licence. Posting of digital content on Instagram and Facebook requires authorisation from the authorities. Furthermore, posting online content not only requires approval from the authorities, but also compensation for the services.

Nyambu (2013:185) indicates that individuals who do not obey this law are fined. They have to pay Ksh100 000 (approximately 990 USD, depending on the current exchange rate) to the authorities or be sentenced to five years in custody. By introducing this law, the government of Kenya aspires to increase the country`s earnings to develop the economy. The purpose of this legislation is also to confirm that the country is protected from all national and international online security threats. However, this rule will have a bearing on the population, since OTT applications allow the community to access information with ease. Thus, in circumstances where the country might experience an

epidemic disease or community protests, OTT applications enhance access to information (Article 19, 2018). Lastly, traditional network operators in Kenya argue that OTT providers have an adverse effect on their operations, with concomitant lower revenues (Mamabolo, 2018).

2.6.2 Context of OTT communications services in Uganda

According to the Uganda Communications Commission (2018), Uganda has a populace of nearly 41 million, while roughly 21.6 million mobile telephone subscribers were recorded in 2017 and 24.9 million in 2018. Nearly 18 million use the Internet regularly, and this is attributed largely to broadband connection. All automated communications providers are mandated to adhere to the Electronic Transactions Act, 2011 (CIPESA, 2018b). According to West (2016), Uganda takes responsibility for protecting the public from all online operations. Hence in 2016, the government approved provisional blockage of several OTT applications in the country. Facebook and WhatsApp were blocked during the elections in case of security threats (Musisi, 2016).

In March 2018 the government announced legislation requiring the public to register SIM cards for their mobile phones. Since the introduction of SIM card registration, mobile subscriptions have declined from 24.3 million in 2017 to 21.6 million in 2018. The reduction in mobile phone subscriptions is attributed the new legislation (Uganda Communications Commission, 2018). According to Ernst & Young (2018), the government of Uganda has reviewed the Excise Duty Act, 2014. The amendment of this Act led to the development of taxation guidelines on OTT communications services. The guidelines were introduced on 1 July 2018. The government of Uganda maintains that this law is essential to the development of the economy. The intent of the government is to make use of the taxes imposed on OTT communications services to subsidise the growth and development of public services. Furthermore, this legislation necessitates consumers to reimburse government for the use of OTT communications services. Consumers are obliged to pay an amount of 200 Ugandan shillings or 0.0516 USD every day to access OTT communications services (Lubega & Natujana, 2018).

Namubiru (2018) asserts that WhatsApp, Facebook, Twitter, Telegram, FaceTime, Viber and WeChat are several OTT applications subjected to taxation. Those community members who fail to pay tax are unable to use OTT applications. Nevertheless, the state

has not enforced tax on Gmail and other comparable email services. In addition, end users are also mandated to pay OTT services tax while roaming. Users who do not pay OTT tax prior to travelling overseas will not be able to access their OTT applications when abroad. OTT taxation is enforced to all post-paid and prepaid end customers as mandated by the Parliament of Uganda (2018).

2.6.3 Context of OTT communications services in India

Tumu and Medudula (2014:1757) note that OTT communications providers have transformed the ICT sector in India. Traditional network providers are experiencing competition from OTT providers, since there is a soaring demand for OTT applications. According to IAMAI and Kantar (2016), access to online content is developing in the country, with an estimated 69 percent of urban users and 39 percent of rural users in 2016. According to Statista (2019a), internet users equated to 483 million in 2017 in contrast to 437.4 million in 2016. The use of the Internet in India signifies the popularity of online applications, thus live internet communication is a generally preferred application. Aulakh (2017) reveals that in 2015, a public discussion process for determining relevant regulatory measures for OTT communications services was initiated by India's regulatory authority.

The purpose of the dialogue was to explore the implications of OTT communications services. The discussions were intended to deliberate on whether regulations or policy interventions could be applied to OTT operations (Bhawan, 2015). The outcomes of the colloquia led to the development of a consultation report on the OTT applications framework. In the main, the country has not advanced any policy or legislation on OTT applications. Thus, the traditional network operators are implementing management strategies that will assist in protecting their infrastructure and businesses by co-partnering with the OTT providers (Mukherjee & Dhir, 2016:84).

Bhawan (2015) indicates that government is required to safeguard the public from illegal interception and other internet threats. Hence, the study conducted by the Telecom Regulatory Authority of India in 2014 reveals that the government of India needs to support an equal playing field in relation to policy and regulatory for all players in the industry. The study recommends that government undertake a complete assessment of existing policies and regulations. The authorities in India have commenced with the

review of net neutrality guidelines as encouraged by society and several business consortiums. According to Accessnow (2017), in 2017 the regulatory authority pronounced that the regulatory framework on net neutrality would be amended. The current ICT legislation will incorporate a section specific to net neutrality laws. The amended paragraph will stipulate that all online digital services on the network should be treated fairly and equally.

2.6.4 Context of OTT communications services in Thailand

Schaffar (2016) notes that OTT applications in Thailand are popular. The country had 53 percent of internet penetration in 2017, which increased to 59 percent in 2018. (Statista, 2019e). According to Anantho (2018), the government of Thailand has appointed an OTT commission to recommend and develop applicable OTT regulations for the country. The authorities in Thailand have approved the development of OTT communications services regulations. The decision to regulate OTT applications emanates from objections from traditional network operators. They complain that online OTT streaming applications are impacting adversely on the television market. Mandel and Long (2018) assert that in 2017, OTT providers were obligated to register with government for the provision of their services to customers. The registration certifies their authenticity to deliver OTT applications in the country.

The National Broadcasting and Telecommunications Commission (2017) reveals that the government is committed to regulatory equality between OTT providers and traditional network operators. Hence government has introduced operational costs for the transmission of online digital content. Furthermore, the government is reassessing the taxation and licensing regime for all online content providers (Electronic Frontier Foundation, 2017). Thailand was contemplating regulation of OTT communications services under the current electronic communications guidelines. However, the idea was not successful as OTT applications were unsuited to the current regulation framework (Kakhai, 2018:44).

2.6.5 Context of OTT communications services in Singapore

According to Freedom House (2018), Singapore had a population of almost 5.6 million and internet penetration was nearly 81 percent in 2017. More people in the country are embracing OTT applications, especially broadcasting streaming services. The populace

of Singapore prefer to attain news from OTT applications (Soon & Samsudin, 2016). According to Newman, Fletcher, Kalogeropoulus, Levy and Nielson (2017), in 2017 approximately 110 million people viewed online news. However, all digital platforms that broadcast news services are required to register with the authorities. InfoComm Media Development Authority (2018) indicates that all OTT providers are obliged to comply with the Broadcasting and Internet Class Licence Conditions Act. The government of Singapore is currently reviewing and exploring appropriate approaches which can be enforced to resolve the challenges of OTT communications services. Rajah & Tan Asia (2018) state that in 2016 the authorities published guidelines for the preservation of private data. Individuals who contravene the law and disclose data belonging to the public will be penalised. Furthermore, Singapore instituted net neutrality laws in 2011 that specified that all network operators were required provide authentic content. Telecommunications network providers may still hold back content conveyed on their network systems. The regulatory authority in Singapore still interferes where anti-competitive practices are evident. Where applicable, traditional network operators and OTT providers may collaborate in managing online traffic (Tan, 2017:21).

2.6.6 Context of OTT communications services in China

According to Statista (2019d), China had approximately 772 million internet users in 2017 compared with 731 million in 2016. According to Zhao (2017:30), since the advent of the global digital revolution, the country has been in the process of establishing applicable policies and regulations for both broadcasting and communications services. Xu (2014:25) mentions that in 2010 the government of China introduced internet censorship regulations. The country administers all internet operations within the borders of the country. Websites such as Wikipedia have been blocked as the authorities believe that such websites can lure cybercrime to the country.

Shahbaz (2018) reveals that most Chinese people opt for the country`s traditional communications services since WhatsApp and Facebook have been blocked. China has its own WeChat application, located in Shenzhen and preserved and maintained by Tencent. This application has similar characters to WhatsApp. However, the distinction between WhatsApp and WeChat is that, compared to WhatsApp, WeChat has close ties with the Chinese government. WeChat had nearly 963 million active subscribers in 2017 (Yanes & Berger, 2017:14).

However, the Chinese were dissatisfied with the embargo on WhatsApp on social media platforms, since WeChat is not compatible to WhatsApp. The Chinese community cannot interact with other communities outside the borders of China when using WeChat, compared with WhatsApp. Bradsher (2017) notes that the Chinese government has developed special software to censor OTT communications. China has also created an OTT application called Weibo, comparable to Twitter which only the Chinese can access. The Chinese government has implemented this restriction because of protection and security concerns. Nevertheless, the government has permitted Microsoft's Skype and Apple's FaceTime to operate in the country. The government has permitted these applications since the authorities are capable of observing and monitoring them (Bamman et al., 2012:3). Wikipedia (2017) indicates that China's preoccupation with surveillance is due to security, welfare and safety concerns.

2.6.7 Context of OTT communications services in the United Arab Emirates (UAE)

According to Freedom House (2017), internet penetration in the UAE was estimated at 91 percent in 2016, 91.2 percent in 2015 and 78 percent in 2011. Mobile penetration was projected at 131 percent in 2011, 187 percent in 2015 and 204 percent in 2016. According to multinational law firm, Baker McKenzie Habib Al Mulla (2017), the Federal Cybercrime Law, No. 5 of 2012 was promulgated with the objective of safeguarding the confidentiality of digital automated data. This law was passed with the intention of the management of private data for the public and commercial sector. However, any infringement of the law or disclosure of public or private data is illegal and subject to penalisation.

Kapur (2015) points out that numerous OTT applications are restricted in the UAE. Viber and FaceTime were banned in 2013, WhatsApp and SnapChat were blocked in 2015. Essentially, the UAE has continued to be concerned by the conundrum of OTT communications services, hence the government is meddling with the digital network systems (International Telecommunications Union, 2017b). However, the regulatory authority is in the process of deliberating pertinent solutions to OTT applications and is reviewing the situation (TeleGeography, 2018).

2.6.8 Context of OTT communications services in Brazil

Ganuza and Viecens (2014:61) note that the communication landscape in Brazil has changed significantly, with the public choosing more online content. However, the quality of broadband is still in a developmental phase in the country. According to Statista (2019c), Brazil had approximately 56.8 percent of internet penetration in 2016 and roughly 115.6 million internet users in 2017. Rossini, Cruz and Doneda (2015) reveal that in 2009 Brazil commenced with the process of developing guidelines for the management of online internet services. Brazil introduced the *Marco Civil da Internet* of 2014, which is legislation for the administration of net neutrality and data privacy. Souza, Steibel and Lemos (2017) assert that the legislation is intended to give all online providers the right to access the network. Again, the guideline pursues to ensure that all content and traditional network operators are considered equitably when accessing network systems.

The objective of the law is to provide guidelines and offer preventive measures for net neutrality and cyber security. In Brazil, all operators on the network should be safeguarded from any traffic exclusions, delays, sifting and scrutinising. The law thus was promulgated for the protection and confidentiality of end users' personal information. It prohibits network service providers from sharing or disclosing end users' private information without the permission of the end user. Public information is controlled for authentic and legal reasons (International Telecommunications Union, 2017a).

2.6.9 Context of OTT communications services in the United States of America (USA)

According to Godlovitch et al. (2015), the USA possesses massive online digital platforms. The authorities have encouraged and supported the growth and improvement of digital communications services in the country. Thus, in 2016, there were approximately 290 million internet users in the country and the diffusion of the Internet was approximately 75.23 percent (Statista, 2018). According to Wikipedia (2019a), in 2005 the regulatory agency of the USA, the Federal Communications Commission (FCC) introduced the net neutrality guidelines. The guidelines specified that all operators should be permitted to use internet platforms in an equal manner.

However, since 2010 there have been various deliberations on the implementation and review of an applicable definition of the net neutrality concept (Early & Bustillos, 2018). Yoo (2017) notes that in 2015 the Commission introduced new net neutrality regulations. The law prohibited network operators from allowing only preferred traffic on the Internet. Again, the law emphasised that network operators were not permitted to block content providers on their network infrastructure. The new law encouraged and promoted equal treatment of all data streams on the Internet. Radia and Melugin (2017) remark that net neutrality law is intended to safeguard traffic on the network. Again, this regulation was envisioned to discourage traditional network operators from affording special treatment to some online content. However, in 2017, the FCC endorsed that the authorities could revoke the 2015 law on net neutrality. Thus, traditional mobile service providers presently are at liberty to block OTT applications on their networks (Federal Communications Commission, 2017).

2.6.10 Context of OTT communications services in the United Kingdom (UK)

According to Ofcom (2018), internet access is intensifying in the UK with more people accessing the Internet by means of mobile devices: from 66 percent in 2017 to 72 percent in 2018. Wild (2018) notes there were objections in the UK regarding competition imbalance among OTT and traditional network providers. Nevertheless, in 2015 the government conducted consultation sessions to evaluate and review guidelines on electronic communications services. During the discussions, the regulation of OTT services was supported. However, a ‘light-touch’ approach was considered a feasible regulation strategy for OTT applications. The reason for opting for such an approach is that it allows for innovation in the sector, since it not a draconian regulatory framework (United Kingdom. Department for Culture Media & Sport, 2015).

According to Ofcom (2018), mobile operators have requested the national authority to confirm that OTT providers comply with electronic communications services laws. Traditional network providers are calling for authorities to enforce payment from OTT providers for the use of their infrastructure. However, the government aims to confirm that the ICT sector is accessible to all players in the market. Hence, the authority is recommending a transparent regulatory structure in the UK. However, the government

supports a self-regulatory administration which has been the norm in the country for all service providers (House of Commons Committee on Exiting the European Union, 2017).

2.6.11 Context of OTT communications services in the [5]European Union (EU)

Internet access in the EU is growing; roughly 32 percent was recorded in 2007 compared with 87 percent in 2017 (Eurostat, 2018). The growth of the Internet is attributed to low-cost broadband connection with almost 72 percent of citizens accessing the Internet daily. Nonetheless, the EU has embarked on various initiatives to resolve the regulatory complications occasioned by OTT applications. In 2016, the Body of European Regulators for Electronic Communications (2016) conducted a study on policy and regulatory implications since the advent of OTT communications services. The European Parliament conducted research on the regulatory landscape of OTT communications services in 2015 (Godlovitch et al., 2015).

Sijirath (2018:176) indicates that since the introduction of OTT applications, the authorities have been attempting to decide whether they should be categorised as electronic communications services. In 2016, the European Commission announced its planned regulatory guidelines on the management of electronic communications services. The directive is a reaction to the transformation in the ICT sector, owing to the advent of OTT applications. Furthermore, the directive on the electronic communications programme seeks to revise the definition of electronic communications services to take account of interactive communications services, thus incorporating OTT applications (Laya, 2017).

Grünwald and Nussing (2016) note that the European Union has implemented guidelines for data protection and privacy to protect the private data of citizens. The legislation is intended at ensuring the playing field is level for all players in the ICT sector. The law entered into force on May 25, 2018. One of the outstanding characteristics of the law is its provision for cross-border information transfer control. In addition, traditional network operators or OTT providers who do not comply with the regulation

[5] The European Union is not a country but a nation of political and economic union with 28 member states that are situated primarily in Europe.

will be subjected to a fine and more restrictive commitments (European Commission, 2018).

2.7 Taxation on OTT communications services implemented in various other countries

The emancipation of ICT and growth of the Internet have contributed to the development of online digital services (Organisation for Economic Co-operation and Development, 2014). OTT applications are offered worldwide without the physical presence of OTT providers within a country. Policy makers are confronted with implementing appropriate taxation models for OTT applications (Anderson, 2016). The figure below shows countries where taxation guidelines have been implemented for OTT communications services.

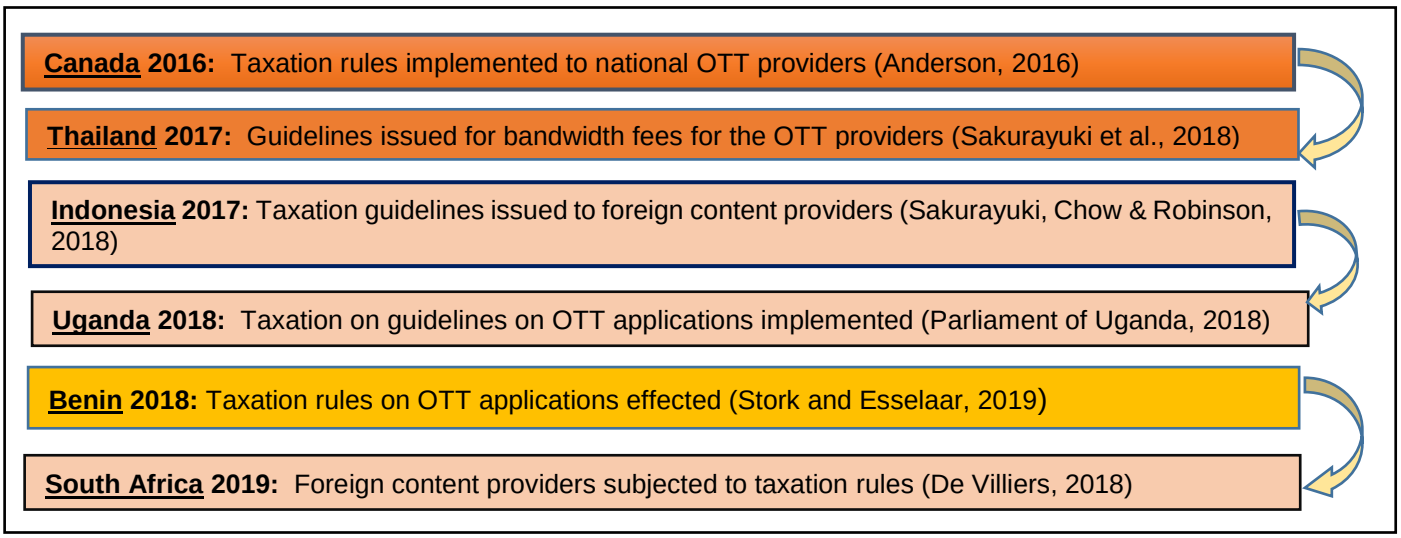


Figure 2.2:Taxation approaches to OTT communications services

Source: Baker McKenzie, 2019

The above figure illustrates countries where taxation guidelines for OTT communications services have been effected. In 2018, Benin and Uganda implemented taxation rules for OTT providers. In 2019, South Africa effected taxation guidelines for OTT providers offering online streaming content.

2.8 Application of the net neutrality model in several countries

According to Jog, Joshi, Thenuan and Dixit (2016), OTT communications services are solely dependent on the Internet for the operation and provision of OTT applications. OTT providers use the infrastructure of traditional network operators for their operations.

Traditional network providers thus can block or disregard OTT applications over their preferred services, on condition that countries institute net neutrality laws. Table 2.3 overleaf presents a synopsis of several countries with net neutrality regulations.

Table 2.3: Net neutrality plans implemented in various countries

Year	Country	Pronouncement on net neutrality
2010	**Chile**	The founding country to introduce net neutrality regulations. Network providers are restricted from blocking traffic on the network (Kamal, 2016).
2011	**Netherlands**	Mobile communications operators are mandated to permit online applications on their networks. Thwarting of internet applications is regulated (Internet and Mobile Association of India, 2015).
2014	**Brazil**	‘’Marco Civil Law”: network providers are not allowed to give preference to traffic on the network nor request remuneration for use of their infrastructure (Pereira de Souza, Viola & Lemos, 2015:40).
2015 revoked 2017	**USA**	Open internet was introduced to protect traffic on the network in 2015. Open internet was revoked; network providers have the ability to prioritise traffic on their network systems (Radia & Melugin, 2017).
2017	**India**	The regulatory authority of India resolved that a phrase in the ICT regulation requires to be incorporated stating that all operators authorised by government should offer open internet and equal treatment to content providers (Accessnow, 2017).
2018	**Canada**	Government chose to endorse net neutrality across the country to protect and assure equal access to online content for the public (Silva, 2018).
2018	**Kenya**	Online movements should have treated alike, notwithstanding the nature of content. All network operators are required not to meddle with the category of content which end users prefer to utilise (Sawe, 2016:379).

Source: Fowora et al., 2018

The above table demonstrates that in instances where net neutrality rules have not been implemented, traditional network providers can simply restrict and block content on the networks. As shown in Table 2.3, net neutrality guidelines exist in Brazil, Chile and Canada, among other countries. However, in the USA, net neutrality guidelines were introduced in 2015 and revoked in 2017. Nevertheless, it is imperative for governments to develop comprehensive net neutrality rules to guarantee level playing fields for all service providers. Bello and Jung (2015:7) indicate that net neutrality laws will promote competition and thus enhance technology innovation for all ICT sector service providers.

2.9 Advancement of data protection regulations worldwide

The Organisation for Economic Co-operation and Development (OECD) (2014) indicates that access to and use of internet services have contributed to cyber threats, especially in respect of personal information. The use of the Internet and OTT applications have intensified online traffic all over the world. Hence, many countries have developed regulations to reinforce the protection of private information. Below is a presentation of some of the countries which are currently implementing or have implemented regulations on data protection.

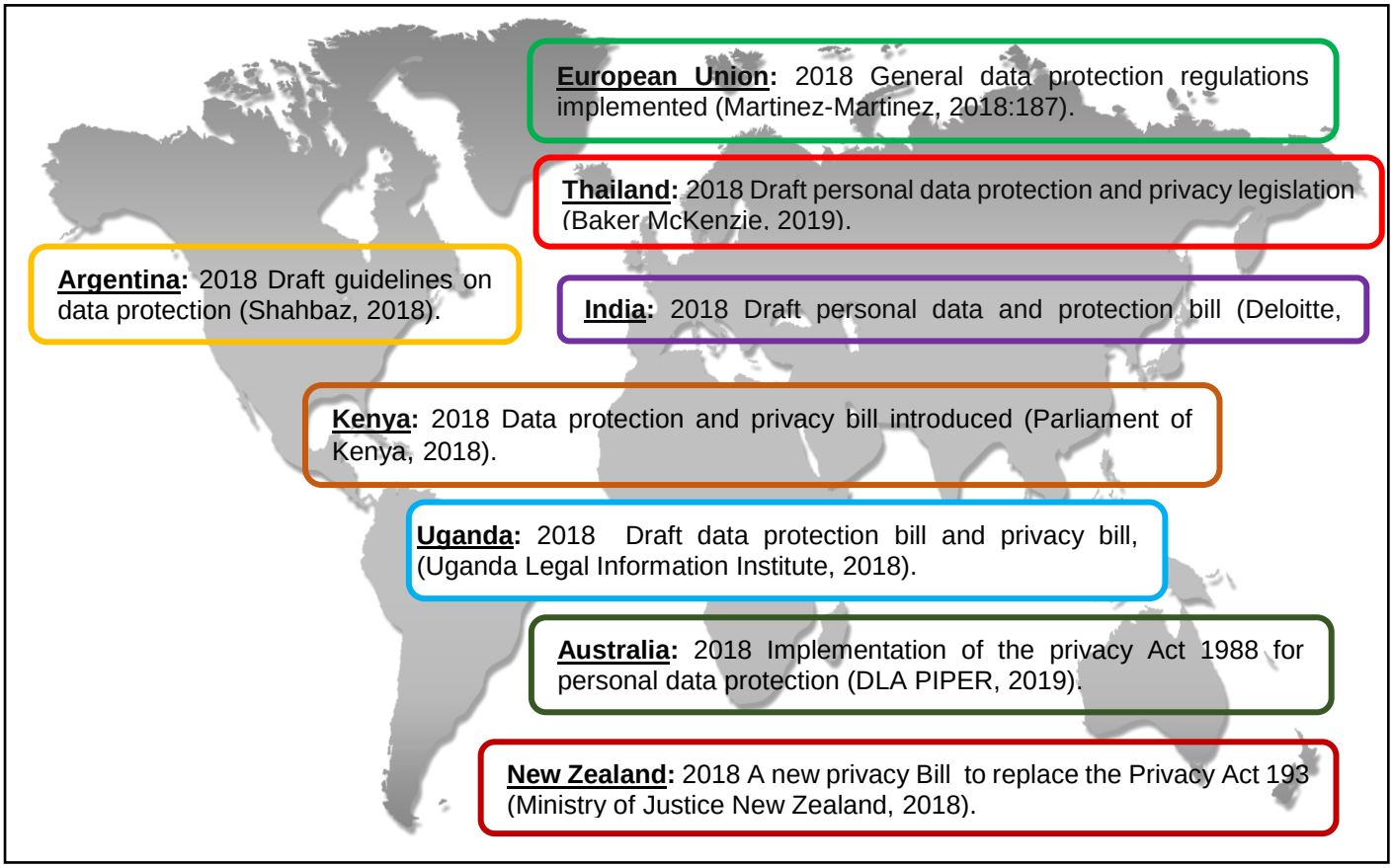


Figure 2.3: Development of data-protection guidelines in several countries

Source: CIPESA, 2018a

When analysing figure 2.3 in 2018 several countries were consulting and effecting data protection guidelines which signify the importance of the regulation. The European Union and New Zealand have forged ahead with the development of data-protection guidelines. In India and Thailand, the authorities are still in the process of developing data-protection regulatory guidelines.

2.10 Theoretical perspective

This section discusses the scholarly theories underpinning the study on OTT communications services. Academic theories have the capacity to support authorities, regulators and role players in understanding the mechanisms of implementing OTT communications services. Therefore, this section discusses the theory of public interest, the diffusion of innovations theory, and the economic regulation theory (Hill, 2017). The researcher decided on these specific theories since they all relate to the provision, application and adoption of OTT communications services with regard to regulatory development, public interest and economic growth.

2.10.1 The Theory of Public Interest

Levine and Forrence (1990:169) contend that the theory of public interest seeks to determine the governance of policy and regulatory development for public benefit. The theory states that in every country there are certain economic elements which have a significant influence on policy and regulation. There are occurrences of regulatory capture in many economies which effect on policy and regulatory failure. This theory also refers to causes for the ineffectiveness of policies and regulations. It specifies that regulatory capture could be the reason, in some occurrences, of non-implementation or unsuccessful implementation of legislation. The theory of public interest is significant to the improvement of public affairs (De Hertog, 2010:35).

According to Shleifer (2005:439), the implication of this theory can be traced to Arthur Cecil Pigou. He was a Cambridge economist who based his work on aspects enhancing the wellbeing of citizens. This theory emphasises that interactions and consultations are essential between communities and government, particularly in decisions that have a bearing on communities. Hence the significance of an interaction process between the public and government in the process of public policy making (Schubert, 1958:34).According to this theory, change is attainable in the ICT sector only if the regulatory organisations are wholly independent of politicians and the wealthy network of commercial enterprises. Therefore, regulation in the context of public theory strives to protect the welfare of communities. Governments are required to intervene where there is an indication of unfair competition practices (Potter, Olejarski & Pfister, 2014:639).

For that reason, authorities are required to intervene in the markets (particularly in the ICT sector) in instances where the operations of OTT applications impact negatively on government's objectives of enhancing the social welfare of its citizens. The theory further posits that the regulatory establishments captured by the commercial sector, network operators, and politicians, or by the organisations themselves, mostly pursue their own interests and not the interests of the society (Hantke-Domas, 2003:170). Hence the researcher is of the opinion that this theory has a significance to this research since the emphasis of the study is for the benefit of the population.

2.10.2 Theory of economic regulation in the telecommunications sector

According to Wenders (1998:17), in principle the theory of economic regulation reflects on the positive and negative effects of policy development and regulation. Accordingly, this theory postulates that in the economy there are generally many factional groups. These factions mainly are concerned with and interested in the benefits of policy and regulation development. The theory points out that some of the interest groups are more powerful than others and possess significant influence with regard to the approval and consideration of policy and regulation (Carrigan & Coglianese, 2016:6). The theory of economic regulation was proposed by the American economist, George Stigler (as cited in Dahl, Shapiro & Cheibub, 2003:392).

According to Stigler, regulatory authorities often face immense pressure from interest groups in the implementation of regulation. These groups comprise, among others, political executives and huge corporations. Stigler specified that regulations in many economies are implemented to advance the programmes of the rich and powerful. In addition, Posner (1974:343) asserts that Stigler contended that communities experience setbacks because of reluctance to implement regulations owing to the influence of powerful forces and those with connections in government.

According to De Hertog (2010:4), key role players in any sector, including the ICT sector, require certainty on policy and regulatory outcomes. However, it is significant for government to comprehend its primary role in the application of regulation and policy, particularly relative to the challenges of monopoly. Furthermore, regulation and policy

ought to be effected to support the enhancement of economic growth and competition in various economic sectors (Sumbwanyabe, Nel & Clark, 2010:24). Therefore, this theory is applicable to the research of OTT communications services as OTT applications are presently not bound to regulation in various countries. The theory of economic regulation provides some contextual perspective on the development of policy and regulations.

2.10.3 Diffusion of Innovations Theory

Abedin (2016:59) explains that this theory describes the whys and wherefores for the application and adoption of ICT services. The theory indicates that since communities are unique, they have dissimilar behaviours and approaches relevant to accepting and adopting innovation. Abedin notes that although technology is complex, some individuals accept and embrace technology earlier and faster than others. However, other individuals discover it only when they become aware of the benefits and popularity of such technology.

Min, So and Jeong (2018) note that the diffusion of innovations theory was developed in 1962 by the eminent American communications specialist and sociologist, Everett Rogers. This theory was devised to understand the perceptions of the general public in accepting innovative technology and new ideas. The theory has been effected in numerous arenas such as communications, health, and marketing. According to Dube and Gumbo (2017:34), the diffusion of innovations theory articulates the growth and implementation of technology, while innovation is a phrase that is associated with the creativity of technology. Diffusion is the practice whereby new ideas, technologies or commodities are disseminated to the public.

Sahin (2006) states that the diffusion of innovations theory is significant since it has the ability to encourage communities to adopt ICT applications. This theory is used in ICT to explore the way in which societies embrace modern technology. Therefore, the researcher is of the opinion that Sahin's point relates to this study, mainly relative to the context of technology adoption of OTT communications services, since these services have been implemented by nations worldwide. Ngai and Gunasekaran (2007:3) indicate that ICT has enabled communications services to be accessed on a wide range of

networks and platforms. Hence, the researcher indicates that the diffusion of technology has the ability to increase the uptake and use of OTT communications services.

2.11 Summary

This chapter provided a literature review on OTT communications services. It outlined methods which several countries and bodies (the EU) have implemented for policy and regulation of OTT applications. The EU, for example, has launched data protection and privacy guidelines for protecting private information of the general public. Furthermore, legislation also provides regulations in respect of the management of personal information for all content providers. Countries such as Kenya and India have introduced net neutrality guidelines, as OTT applications have contributed to increased online traffic. The literature review also pondered on various theories pertinent to the study of OTT communications services. The chapter discussed the theory of public interest, the theory of economic regulation, and the diffusion of innovations theory. The next chapter presents South Africa's ICT legislation and national policies.

CHAPTER 3:POLICY AND REGULATORY OUTLINE

3.1 Introduction

In Chapter 2, the literature review and key concepts fundamental to the topic of OTT communications services were discussed. Chapter 3 deliberates on the legislation enacted and policy programmes devised to stimulate the expansion of ICT in South Africa. The government of South Africa has committed to the prescripts of the General Agreement on Trade in Services adopted in 1998. GATS was initiated with the intent to modernise and liberalise telecommunications services internationally (Steuart, 2005). Even more important, South Africa as part of the global world aims to enhance and grow the ICT sector in accordance with International Telecommunications Union (ITU) standards. Since the advent of democracy, the country has been reviewing telecommunications policies and regulations (Gillward, Mothobe & Rademan, 2018:32). The section below outlines the context of South Africa`s policies and strategies.

3.2 An outline of ICT policies and strategies in South Africa

The Centre for Conflict Resolution (2015) notes that South Africa is a lawful state with a resolutely embedded Constitution. Thornton et al. (2006:10) state that telecommunications services are borderless, since they permit communications across all countries worldwide. Hence, policies and regulations should not be restricted by country, but should be enforced at international level. The Constitution of 1996 articulates that government needs to establish a self-governing regulatory organisation to administer the diffusion of ICT content. In addition, authorities ought to ensure that the ICT sector is inclusive, and every citizen enjoys and benefits from ICT services (Republic of South Africa, 1996a).

Since the advent of democracy, the country has implemented programmes, strategies and regulations in the ICT industry (Republic of South Africa, 1996b). In 1993, the Independent Broadcasting Authority (IBA), Act No. 53 of 1993 was promulgated in the interests of the general public (Barnett, 1999:650). Furthermore, in 1996 a review of the White Paper on Telecommunications Policy was steered by the Ministry of Posts, Telecommunications and Broadcasting, which led to the implementation of the Telecommunications Act, No. 103 of 1996 (Republic of South Africa, 1996c). Following that, the South African Telecommunications Regulatory Authority (SATRA) was

instituted in 1997 under the prescripts of the Telecommunications Act of 1996. In 2000, the IBA and SATRA were merged and a new regulatory authority was established, titled the Independent Communications Authority of South Africa (ICASA). This regulatory authority was established under the prescripts of the ICASA Act, No. 13 of 2000 (Makhaya, 2002:17). Esselaar, Gillwald, Moyo and Naidoo (2010:12) state that the Electronic Communications (ECA) Act, No. 36 of 2005 was successfully enacted in 2005. Both the Electronic Communications (ECA) Act, No. 36 of 2005 and the ICASA Act, No. 13 of 2000 are considered key legislative pillars to reinforce ICT services in South Africa.

Following the establishment of this law, the government developed national strategies for the stimulation, delivery and acceleration of ICT programmes. The Presidential Infrastructure Coordinating Commission (PICC) was established in 2011 to improve and boost the ICT sector and the South Africa economy (Republic of South Africa. Department of Economic Development, 2012). In 2012, South Africa instituted the National Development Plan Vision (NDP): Vision 2030, a policy and strategy guideline to alleviate conditions of impoverishment and improve the country`s economic growth (Gillward et al., 2012:6).

In addition, the Strategic Integrated Project (SIP 15) programme was inaugurated in 2014 to accelerate access of ICT services to every citizen of South Africa. The purpose of the strategy is to confirm that ICT applications and services are reasonably priced and easily accessed by the population (Republic of South Africa, 2014a). In 2016 the South African cabinet endorsed the National Integrated ICT White Paper Policy to realign ICT plans and expand the economy (Republic of South Africa, 2016a). The next section outlines key ICT laws and national and international ICT policy plans applicable to the topic of the current research.

3.3 Global and regional ICT organisations

South Africa, as part of the global community, is a member of and participates in regional and global ICT institutions. ICT international organisations comprise, among others, the International Telecommunications Union (ITU). The next section discusses several international and regional ICT organisations responsible for the facilitation of ICT policies, programmes and regulations.

3.3.1 International Telecommunications Union (ITU)

According to Shahin (2010:11), the ITU was established in 1985, and operates under the prescripts of the United Nations. The ITU is an authoritative body, constituted with the intent of administering and advancing global social and economic issues. The organisation has 193 national affiliated states and nearly 800 members from private, public and educational entities. The objectives of the ITU are listed below.

- To confirm that across the world, governments coordinate and regularise the development of telecommunications services. In addition, the ITU was established to lead the international community, ensuring that its affiliates implement harmonised telecommunications standards (Shahin, 2010:11).
- The ITU coordinates the development of telecommunications services guidelines and strategies. The ITU further disseminates such guidelines to its members, for example, the ITU, in consultation with its members, has developed guidelines on mobile interconnection and roaming services (Asantani, Bigi & Probst, 2001:124).
- The ITU is responsible for the establishment of radio spectrum plans, approaches and techniques for stimulating and intensifying ICT services across the world (Lyall, 1997).

In South Africa, the Ministry of the DTPS, the regulatory authority ICASA, and the private sector are affiliates of the ITU. South Africa participates in numerous ITU study groups. Among others, the study group on ICT public policy and the study group for the advancement of telecommunications services. According to the International Telecommunications Union (2019), the study groups are mandated with recommending appropriate universal guidelines for internet services and telecommunications services competition. In 2017, the ITU introduced a dialogue for recommending and considering policies for OTT communication services. The ITU and its affiliates are in a process of researching and recommending probable policy solutions for OTT communication services (International Telecommunications Union, 2017b).

3.3.2 Sustainable Development Goals (SDG): Agenda 2030

According to Wu, Guo, Huang, Liu, and Xiang (2018), the SDG initiative began in 2015. The goals of the SDG are discussed below.

- Confirming that by the year 2030 there will be no nation across the world that will be subjected to any form of destitution.
- Confirming that globally, all societies by the year 2030 will be afforded decent education facilities and well-organised public health systems. The SDG targets are developed with the aim of reinforcing and guiding global nations with applicable techniques to effect policies and to allocate and distribute resources for the enhancement and welfare of the societies (Wu et al., 2018).

Kostoska and Kocarev (2019:21) indicate that the SDG programme recognises the significance of ICT services in impacting positively on the living conditions of communities. Hence, connecting technology to the unconnected, will lead to improving the livelihoods of communities. Gillward et al. (2018:16) concur that ICT has the capacity to support and accelerate the objectives and strategies of SDG programmes. Thus, globally, digitalisation of services is fundamental to the transformation and development of the economy. The SDG programme has the competence to increase the use and adoption of mobile and internet services (Jones, Wynn, Hillier and Comfort, 2017:7).

3.3.3 The Southern African Development Community (SADC)

Fricke and Visser (2005:16) state that SADC constitutes 14 member countries situated in the southern region of the African continent. The nations endeavour to advance economic development, harmonisations of strategies, security and ICT programmes. The purpose of SADC ICT telecommunications plans are discussed below.

- To provide reasonable and economical telecommunications amenities in the region.
- To generate an ecological ICT scenery and form structures for collaboration among the SADC countries.
- To grow ICT and telecommunications systems in the region, to grow and expand access of ICT technologies in all SADC countries Fricke and Visser (2005:14).

McCormick (2003) asserts that SADC endorsed the ICT Telecommunications Model Bill in 1998 to ensure that SADC countries adopt collective and harmonised telecommunications guidelines. The bill strives to endorse regional ICT policies to improve the capacity of network systems for the establishment of reliable and reasonable telecommunications services (International Telecommunications Union, 2010). In 2012,SADC developed an ICT plan to provide the members with mechanisms to support and strengthen ICT infrastructure in SADC countries. The aim of the SADC strategy is that communities should access and use ICT services and experience the value of ICT. A further objective of SADC is to strengthen and accelerate broadband connections in the SADC communities (Southern African Development Community, 2012).

3.3.4 Communications Regulators' Association of Southern Africa (CRASA)

The Communications Regulators' Association of Southern Africa (2006) is an institution comprising ICT regulators, policymakers and key participants in Southern Africa. Government and the commercial sector are affiliates of CRASA. South Africa is equally a member of CRASA and participates efficiently in fostering ICT regulatory frameworks and approaches with other CRASA members. The organisation's goals are listed below.

- The role of CRASA is to ensure that all affiliates of CRASA work together and coordinate all telecommunications strategies in the region.
- The organisation effects telecommunications strategies with the intent of augmenting ICT expansion in the region (Scott, 2013).
- The aim of CRASA is to ensure that countries are on track in the execution of telecommunications policies and regulations, for example, South Africa, with other SADC affiliates, are in the process of developing regulatory guidelines on SADC roaming policy (Southern African Development Community, 2015).
- CRASA supports SADC countries in comprehending the digital migration policy (International Telecommunications Union, 2010).

3.4 Legislation and policies in the ICT sector

ICT is administered, directed and overseen by a variety of legislation and policy programmes. However, the current study does not discuss all legislation and policy

programmes. The Constitution, ICT sector legislation, and national programmes are discussed below.

3.4.1 The Constitution 1996, South Africa

South Africa is a democratic country and abide by the rules and values of the 1996 Constitution (Republic of South Africa,1996a).Pertinent goals of the Constitution (1996) are discussed below.

- The Constitution is the highest and ultimate statute in the country which preserves the rights of the general public. The law provides the citizens with the values of self-respect and sovereignty (Diga, 2017).
- Section 7 of the Constitution, titled the Bill of Rights, proclaims that the government ought to recognise, defend and stimulate the privileges of the nation.
- Section 32 of the Constitution affords the population the liberty and entitlement to attain information.

For that reason, the Constitution underscores the importance of government in affirming that the public have access to ICT services and the freedom to use the Internet and other technology services (Republic of South Africa, 1996a). Mawela, Ochara and Twinomurinzi (2017:147) indicate that ICT is a valuable tool that can be used to promote and implement the diffusion of information through internet technology. The Constitution (1996) confirms that the society have the right to the benefits generated by technology. Therefore, it is the obligation of the administration to draft fitting policies and strategies that will manage and protect the rights of society with regard to access of information through ICT services (Republic of South Africa, 1996a). As illustration, OTT applications serve as applicable instruments that can facilitate the right of citizens to access information.

3.4.2 Telecommunications Act, No. 103 of 1996

Horwitz (1997:63) indicates that subsequent to the democratic processes in 1994, South Africa initiated a legislative development programme for telecommunications services. The processes resulted in several policies and regulations being modified. The policy revision was executed primarily because of the transformation of the democratic system

in the country. This legislative progress led to the Telecommunications Act, No. 103 of 1996. This Act was developed to:

- outline regulatory principles in the interests of South Africans, explicitly pertaining to telecommunications services (Naidoo, Kaplan & Fransman, 2006);
- encourage telecommunications services that are cost effective in South Africa (Zlotnick,1999:216); and
- stimulate investment and improve economic growth (Republic of South Africa, 1996c).

Furthermore, the legislation also ascertained a base for the formation of the self-governing regulatory organisation, the South African Telecommunications Regulatory Authority (SATRA) (Republic of South Africa, 1996b). However, in 2000 SATRA was merged with the Independent Broadcasting Authority (IBA) to create the Independent Communications Authority of South Africa (ICASA) (Republic of South Africa, 2000).

3.4.3 Competition Act, No. 89 of 1998

Roberts (2017) indicates that the Competition Commission is a constitutional, independent competition regulatory institution, together with the Competition Tribunal and the Competition Appeal Court. The Competition Commission was established to:

- enforce values and standards for the management of anti-competitive conduct in the commercial landscape. The organisation was effected under the Competition Act, No. 89 of 1998.The Commission aspires to ensure that the South African commercial sector operates with fairness and proficiency; and
- administer and conduct market enquiries on any disruptive, exploitative and monopolistic practices in South African business. Again, the Competition Commission is authorised to facilitate the formation of businesses that intend to amalgamate (Republic of South Africa, 1998).

Hartzenberg (2006:667), states that in 2002 the Competition Commission and ICASA entered into a Memorandum of Understanding. The intent of the MOU was the establishment of a partnership between the organisations in the management of business and prevention of interference in the ICT sector. Fourie, Granville and Theron (2018) indicate that worldwide the telecommunications industry is characterised by

dominance, exacerbating the difficulty of small players' accessing and penetrating the ICT sector. Furthermore, in conditions where there is confirmation of collusion or any practice of domination, the Competition Commission is authorised to impose penalties on those organisations as indicated in the Competition Act, No. 89 of 1998 (Aproskie & Goga, 2010). Hence the current study investigates anti-competitive behaviour in respect of the operations of OTT communications services.

3.4.4 Independent Communications Authority of South Africa (ICASA), Act No. 13 of 2000

Section 192 of the Constitution specifies that ICASA is an sovereign regulatory organisation mandated to oversee the regulation of radio, media and television services (Republic of South Africa, 1996a). It has the following objectives.

- ICASA is mandated to oversee and develop regulatory guidelines for communications services. The guidelines for communications services in essence is developed for the interest of the people and further enhances an impartial and objective ICT ecosystem (Thornton, 2010).
- Section 67(4) of the ECA Act 36 of 2005 specifies guidelines for telecommunications services and describes markets. The regulator should assess any anti-competitive practices in the ICT sector and develop regulations to resolve issues in respect of such issues and confirm fair competition practices (Republic of South Africa, 2005).

The functions of ICASA were inherited from two former regulatory organisations: SATRA and the IBA. The institutions were fused to ensure that the regulatory authority functions impeccably. The regulatory authority is required to be neutral and execute its responsibilities without preference or prejudice (Lesame, 2000:29).

3.4.5 Electronic Communications and Transactions Act, No. 25 of 2002

According to Chisango and Lesame (2017:51), Act No. 25 of 2002 was promulgated for the following reasons:

- The legislation will ensure that every citizen in undeveloped areas of the country

have the right to use and access automated services. The law was developed to stipulate guidelines on cybernetic transgressions and for the management of e-business services. The law is applicable to all categories of communications applications, for example, email, internet and short message services (Eiselen, 2014:2806).

- The law seeks to enhance e-government facilities and the growth of information for the wellbeing of the citizens.
- The law endeavours to confirm that the standard of South African automated services is aligned and equivalent to global requirements.
- The legislation is intended to ensure all electronic communications services function optimally for all citizens and there is no exploitation of automated services (Republic of South Africa, 2002a).
- The law will promote and support the use of e-government facilities and strive to encourage the expansion of internet services (Thornton, 2010:244).
- The law will confirm that societies in remote areas access and use e-commerce services. Most importantly, the Act aims to develop guidelines for all automated services disseminated over the Internet (Republic of South Africa, 2002a).

3.4.6 Regulation of Interception of Communications and Provision of Communication-Related Information (RICA) Act, No. 70 of 2002

According to Mare and Duncan (2015:15), RICA was promulgated in 2002 as a result of unlawful operations made possible by modern technology communications. Cellular phones, satellites and internet applications are technology services that facilitate online criminality. RICA legislation prohibits members of the public from intercepting telephone conversations of individuals or organisations. Members of the public who intercept telephone conversations for any specific reason should request permission from such individuals through the authorities. RICA thus regulates all matters relating to interception and monitoring of electronic communications, in order to combat fraudulent activities (Mashida, 2013).

RICA focuses on telecommunications and internet service providers (Pistorius, 2009:6). The law requires traditional network providers to register end users when purchasing SIM cards. RICA mandates network providers to obtain personal identification

information of all end users and to authenticate and update customer data continually. RICA further requires traditional network providers to certify that public data in their possession is safely preserved. Such information ought to be accessed only with mandatory authorisation (Republic of South Africa, 2002b).

3.4.7 Electronic Communications Act, No. 36 of 2005

The ECA Act was enacted for the following reasons:

- The intent of the legislation is to outline policy guidelines on electronic communications.
- The Act aims to inspire and encourage the use of ICT services across the country and confirm that all communities possess access to electronic communications services (Chisango & Lesame, 2017:50).
- To confirm that all traditional network operators, function in an unbiased manner with fair competition practices by all service providers in the ICT sector (Gillward et al., 2018:76).
- To support government with the necessary mechanisms to circumvent any form of unfair competition practices in the ICT sector in the country (Republic of South Africa, 2005).

3.4.8 South Africa (SA) Connect

Gillward et al. (2018:37) state that the South African broadband policy, termed SA Connect, was implemented in 2013. The main intent of this policy is that all South Africans, regardless of location, ought to access broadband services at a reasonable cost. Government, through broadband connectivity, envisages enhancement of commercial growth and opportunities for ICT innovation. Government's commitment is to ensure that communities spend merely 2.5 percent of their entire disposable income on ICT communications services (Republic of South Africa, 2013b:18).

Papacharissi and Zaks (2006:64) assert that broadband technology is perceived globally as significant, since ICT has become essential in unlocking and enhancing economic growth. Digitisation has become a significant feature worldwide, hence the requirement for all governments to progress with effective and speedy broadband infrastructures. Broadband connection is important in encouraging public use of electronic services supplied to the public by government and the private sector (Naidoo et al., 2006:7). The

researcher regards SA Connect as valuable to the current study, since broadband connection is a means of providing communities with internet facilities and thus encourages the use of OTT communications services.

3.4.9 Protection of Personal Information (POPI) Act, No. 4 of 2013

The importance of the Act is discussed below

- According to Da Veiga and Swartz (2017:56), the POPI Act was promulgated to give effect to Section 14 of the Constitution of 1996 which addresses the right to confidentiality in respect of public data. The law intends to provide governance tools for the safeguarding and movement of confidential information in and across the boundaries of the country (Republic of South Africa, 2013a).
- The Act will equip government with the requisite information, standards and guidelines for institutions liable for the endorsement and implementation of the POPI law (Republic of South Africa, 2013a).

Dlodlo, Skosana and Dlodlo (2014) assert that personal data ought to be administered in a lawful manner. The law is significant with regard to the use of telecommunications services (Republic of South Africa, 2002b). Since traditional network operators are in possession of private data, such data ought to be appropriately administered to preclude misrepresentation and manipulation of the data (Kandeh, Botha & Futcher, 2018:6).

3.4.10 National Integrated ICT Policy White Paper, 2016

Gillward et al. (2018:37) state that the National Integrated ICT Policy White Paper was endorsed by the Cabinet in 2016. Below are the aim of the National Integrated ICT Policy White Paper:

- The policy is directed at confirming that the South African ICT sector is digitised, competitive, reasonably priced and accessible to the general public. The national policy aims to safeguard content on internet systems. The policy aims to ensure that traffic on networks is protected from any constraints or meddling or any other unfair treatment.

- Furthermore, the policy requires to confirm that modern technology has an impact on the general public, that digitisation is enhanced in the country, and competition is upheld throughout the ICT sector (Republic of South Africa, 2016a).

The National Integrated ICT Policy White Paper recognises the accelerated evolution of ICT communications services. However, it is silent on the development of guidelines on OTT communications services. The revolution in OTT applications has encouraged increase of the demand for ICT services and for new ICT network providers to penetrate the market (Republic of South Africa, 2016a).

3.4.11 Cyber Crimes and Cybersecurity Bill, 2017

Sutherland (2017:83) states that rapid development of the Internet has challenged governments worldwide with regard to cybercrime. South Africa, like other countries, has the obligation to prevent cyber outbreaks within and beyond the boundaries of the country. The intent of the legislation is to guarantee the country is protected from cybercrime (Grober, Van Vuuren & Zaaiman, 2011:113). Each person using electronic and computer-generated services in the country is at risk of cybercrime. Accordingly, all internet-connected individuals are vulnerable to computer hacking and cyber threats. The legislation stipulates that anyone found guilty of cyber-related offences, depending to the description of the offence, will be incarcerated (Republic of South Africa, 2017a).

3.4.12 Vision 2030: The National Development Plan (NDP)

According to Gillwald et al. (2018), the South African government is cognisant of the significance of ICT. The NDP is aimed at all economic sectors, including the ICT sector, in South Africa. The NDP, as a national policy, is a significant national economic idea that the government has established with the intent of resolving among citizens inequality and reducing levels of poverty by 2030 (National Planning Commission, 2012:26). The perspective of the NDP, specifically for the ICT sector, is to assure citizens that ICT is a fundamental way of advancing government policy processes towards achieving Vision 2030 goals (Gillwald et al., 2018).

The National Science and Technology Forum (2018) stipulates that the NDP endorses and acknowledges the importance of the population's access to ICT services. ICT has the aptitude to generate a platform for South Africans to become dynamic and part of

the global community (National Planning Commission, 2012:164). In summation, ICT has the capacity to impact government technology systems in schools, clinics and hospitals positively, thus providing value to society, the commercial sector and citizens alike (Akande & Van Belle, 2014).

3.5 Summary

The Constitution (1996), as the highest rule of the country, certainly provides direction and informs the general public of their rights to information and the safety of their private data. The chapter discussed the Cyber Crimes and Cybersecurity Bill, 2017, developed with the intent of preventing cybercrime. The discussion above outlined important aspects of the South African ICT sector legislation with regard to competition, consumer protection and barriers to entry. The chapter revealed the positive and negative implications of policy and regulatory development, especially with regard to the Competition Act, No. 89 of 1998, Act No. 70 of 2002 (RICA), and Act No. 4 of 2013 (POPI). Chapter 4 discusses the development of OTT communications services in South Africa.

CHAPTER4: OTT COMMUNICATIONS SERVICES IN SOUTH AFRICA

4.1 Introduction

Chapter 4 discusses the emergence of OTT communications services in South Africa. The chapter thus deliberates South African OTT communications services at length to extrapolate significant issues and developments in resolving the study problem. Darji et al. (2016:2) indicate that OTT applications, referred to as disruptive technologies, have transformed the [6]ICT ecosystem. The e-commerce, broadcasting and communications sectors have been revolutionised from traditional to digital services. However, it is imperative to understand that ICT is the fundamental constituent of OTT applications worldwide, as noted by Gillward et al. (2018:18). The chapter will outline the context of South Africa`s ICT, since ICT is an integral enabler of OTT technologies.

4.2 The ICT landscape in South Africa

ICT is the vanguard of South Africa's national growth (Republic of South Africa, 2017c). ICT offers the prospect of enhancing the country`s economic development and productivity. ICT contributed nearly 3.1 percent to the gross domestic product (GDP) in 2013 and 3.0 percent in 2014 (Republic of South Africa, 2017c). Mobile phone users have increased from 82.2 million in 2017 to 91.7 million in 2018, while mobile data subscribers intensified from 8.2 percent in 2016 to 22.1 percent in 2017 (Independent Communications Authority of South Africa, 2019:31).

The main reason for the escalation of mobile phone users and data services is because ways of doing things have changed. More and more people prefer to converse via OTT applications instead of having face-to-face conversations. People are now accustomed to online banking rather than physically going into a bank (Chigada & Hirschfelder, 2017:8). The Independent Communications Authority of South Africa (2019:30) asserts that device-to-device customers improved from 5.8 million in 2017 to 6.9 million in 2018. Traffic of online content has grown from 55 percent in 2016 to 68 percent in 2018. Global transmission of internet content grew from 37.6 percent in 2017 to 44.3 percent in 2018. The figure overleaf gives a statistical presentation of South Africa`s access to the

[6] An ICT ecosystem comprises the guidelines, approaches, methods, data, technology systems, applications and role players that set up technology landscape for a country and business enterprise. An ICT ecosystem includes various entities who generate, buy, sell, standardise, accomplish and use technology.

Internet according to provinces. Some people in South Africa access the Internet at home, while others use it at workplaces, schools, universities, and at internet cafés (Republic of South Africa, 2017c).

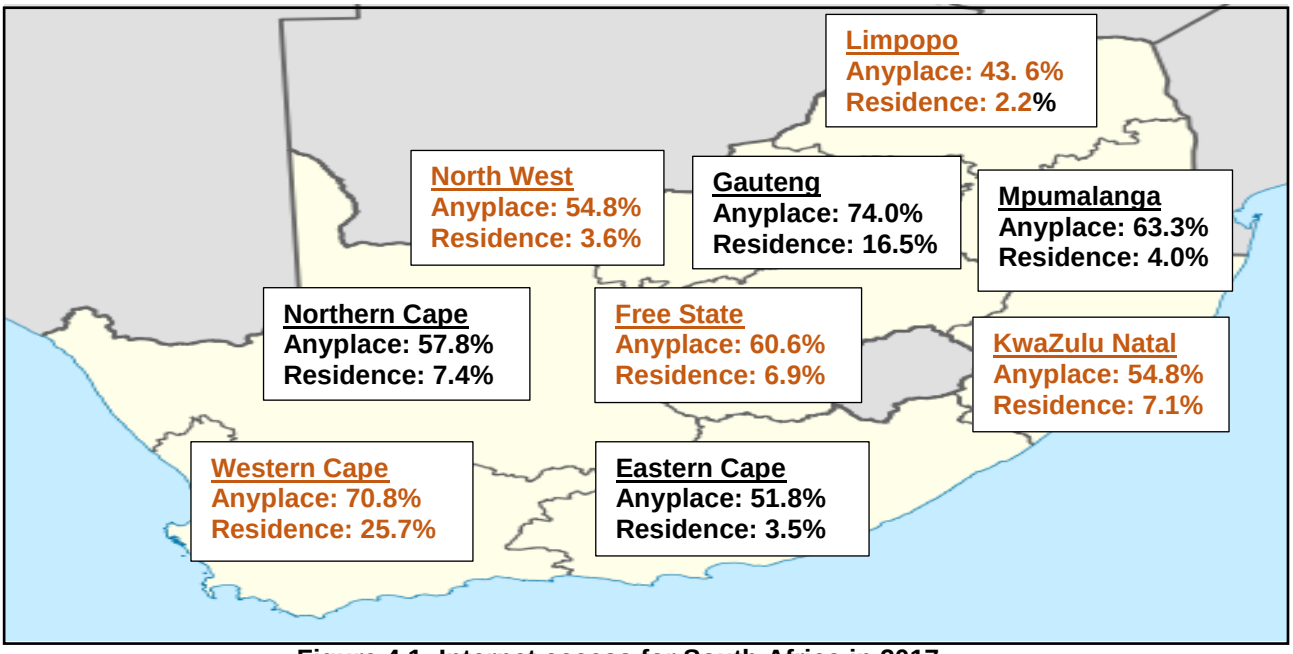


Figure 4.1: Internet access for South Africa in 2017

Source: Republic of South Africa, 2017c

The figure above indicates communities in the country generally access the Internet at various locations and not necessarily at home. There is a huge percentage variance between communities accessing the Internet at anyplace and those that access the Internet at home. On the whole, in 2017 internet access for the country was recorded at 61.8 percent for citizens accessing the Internet anyplace, and 10.6 percent for those with access at home (Republic of South Africa, 2017c).

4.3 The emergence of OTT applications in South Africa

The African Broadband Forum (2014) indicates that South Africans are progressively transitioning into the digital sphere, hence the uptake of OTT applications. Smart devices and internet coverage have stimulated demand for OTT communications services (Yaici & Sale, 2016). OTT applications have been effected in several economic sectors in the country. Even though the current study is focused on the communications sector, the researcher addresses the communications and broadcasting arena as constituents of ICT. Internet-based applications services in the tourism, transport and e-commerce sectors are also discussed to illustrate the emergence of online applications

services (Godlovitch et al., 2015:10). The transport and tourism industries have introduced applications that also depend on the Internet for functionality, similar to OTT technologies in the communications and broadcasting sectors. These technologies, however, do not conform with regulations (Korze, 2018). The researcher, by incorporating the transport and tourism fields, intends to attest to the extent of ICT development and the proliferation of OTT technologies in South Africa. The figure below illustrates the OTT applications ecosystem.

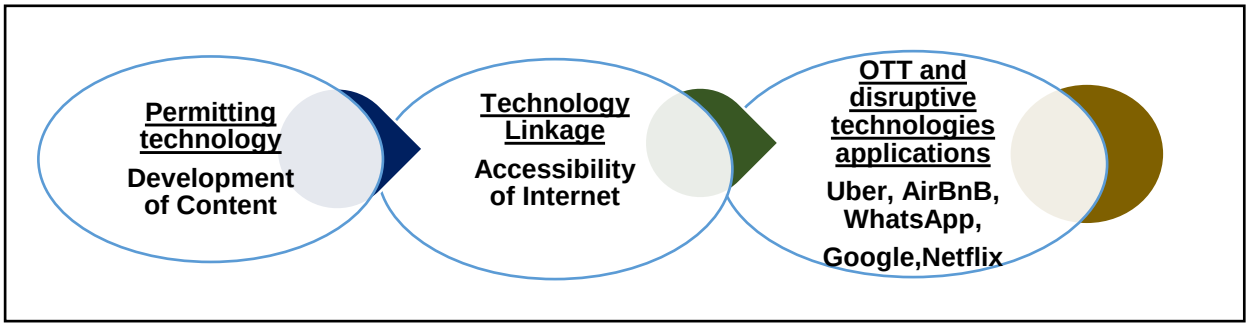


Figure 4.2: The OTT applications ecosystem

Source: Darji et al., 2016:11

In the above figure, all OTT applications are termed disruptive technologies in all economic sectors, for example, the transport or broadcasting arenas can only be operational through the Internet. The figure illustrates that all applications, regardless from which sector (transport, broadcasting or tourism), are dependent on the Internet for functionality and delivery of the services.

4.3.1 The communications sphere

According to Fowora et al. (2018:15), OTT applications in the communications sphere comprise applications such as Twitter, WhatsApp, Facebook and WeChat, generally used for messaging and calling services. Chigona, Chigona, Ngqokelela and Mpofu (2009:2) note Mxit was the initial OTT communications service that became popular in South Africa, introduced in 2005. Mxit was a free, instant message service which originated in Stellenbosch. The application was generally prevalent among millennials. Butgereit, Botha and Van den Heever (2012:30) mention that Mxit improved the progress of millions of learners and the general citizens, since the service provided access to educational tools. Vermeulen (2012) reveals that Mxit was the most trendy communications application, with approximately 10 million national users and 50 million

international users recorded in 2011. Muller (2012) notes that subsequent to Mxit, BlackBerry messenger was launched, which also gained wide popularity with the use of BlackBerry smartphones. In 2011 there were approximately 3.3 million users of BBM in the country (Vermeulen, 2012).According to Edosomwan, Prakasan, Kouame, Watson and Seymour (2011), Facebook was introduced in 2004 in the USA and was ultimately adopted in South Africa. Facebook is comprehended as more of a social networking hub, since it offers news and commercial services. Bosch (2009:186) asserts that in 2009 South Africa had approximately 13 642 Facebook subscribers. Esselaar and Stork (2018) state that OTT communications services provide platforms for creative communications, hence people are converting from traditional SMS and voice calls to OTT applications.

4.3.2 The broadcasting sphere

Broadcasting OTT technologies are OTT applications for the transmission of content, similar to television (TV) services which comprise media-services providers such as Netflix and Showmax (Fowora et al. 2018:15). McLeod (2018) states that the Internet will cause disruption in the broadcasting sector. Robb and Hawthorne (2019) note that in South Africa, MultiChoice, which is a subscription television service, dominates the ICT broadcasting industry. Citizens are increasingly using the Internet for news content, hence in 2018 news24.com, timeslive.co.za and iol.co.za were some of the websites retrieved the most. Showmax was launched in South Africa in 2015 (Naspers, 2016).

Subsequent to the launch of Showmax, international OTT broadcasting providers similar to Netflix, Google Play and Amazon Prime penetrated South Africa`s broadcasting market in 2016. South Africans use smart devices, such as tablets and laptops for the transmission and viewing of content over the Internet (Parrot Analytics, 2018). Robb and Hawthorne (2019) state that more online OTT broadcasting providers are penetrating the sector. Vodafone Play, owned by Vodacom, was introduced in 2015, and in 2017 Digital Entertainment on Demand was launched. In 2017, Black, which is owned by Cell C, and Kwesé Play, owned by Econet, also entered the broadcasting sector. Darji et al. (2016:3) reveal that OTT broadcasting services such as video-on- demand enable end users to view television content and download media content. Chuchu, Chiliya and Uta (2014:158) state that uptake and use of electronic broadcasting services are on the rise; Netflix and YouTube are ubiquitous in South Africa and challenging pay TV. Shapshak

(2017) indicates that in 2016 the country had almost 8.5 million YouTube users. According to MultiChoice (as cited in *New Times*, 2018), Netflix recorded roughly 300 000 to 400 000 customers in the country in 2017.

4.3.3 The transport sphere

According to Darji et al. (2016:21), internet-based applications services in the transport sector are termed travel-sharing services and comprise online taxi services. Uber and Taxify, as they are widely known, operate in similar fashion to traditional metered taxi services which individuals use by phoning for such services. However, with Uber and Taxify, commuters request the taxi service from an internet-based application. Commuters do not have to call the taxi service personally as is the case with metered taxis. Their fee structure is not fixed but dependent on the distance and location of the customers and destination.

Slavulg, Kanizaj and Durdevic (2016) note that the public transport sector has endorsed the emergence of applications-based taxi services which have the capacity to link commuters and drivers through internet technology. Dube (2015) indicates that Uber and Taxify service providers make use of smart devices to link with clients and track their location. Dudley, Banister and Schwanen, 2017 asserts that Uber was introduced in 2009 across the world. Henama and Sifolo (2017:4) reveal that in South Africa, Uber was launched in 2013.

Taxify, which is also an applications-based public transport service, was introduced in 2013 as referred to by Taxify South Africa (2018). Ndlovu (2017) mentions that internet technology has revolutionised the transport sector. However, according to Dube (2015), applications-based public transport services are mostly available in urban areas. Dube further indicates that Uber has also launched Uber Eats, an online application that customers use to order fast food. South Africa recorded approximately 1 million Uber end users in 2017 (Venter, 2017).

4.3.4 The tourism sphere

Henama (2018:8) describes internet-based applications in the tourism sector as application-built technology that expedites travellers' and vacationers' requirements. Van Raalte, Parsons and Hendrickse (2018) indicate that the diffusion of technology

and the penetration of the Internet have led to the success of Airbnb in the tourism sector globally. Airbnb, which is an applications-based service, has challenged the South African tourism sector since its launch in 2015. Oskam and Boswijk (2019:26) state that Airbnb originated in the USA in 2008. Airbnb is an open-market tourism service built on the internet network to offer tourists information on accommodation.

Henama (2018:9) reveals that in South Africa, Cape Town leads in the implementation and adoption of Airbnb services. According to Guttentag (2015:1195), internet-based tourism services are growing, especially in the Small, Medium, and Micro Enterprise (SMME) sector. According to Airbnb (2018), since the launch of the Airbnb application, the country has had approximately 2 million vacationers and nearly ZAR 8.7 billion were contributed towards the country's economic development in 2017.

4.3.5 The e-commerce sphere

Boyaci and Baynal (2016:810) define e-commerce as a commercial and/or retail structure whose operations are conducted over the online web and entail the exchange of personal data. De Klerk and Kroon (2005:33) indicate that South Africa`s commercial sector has transformed as a consequence of international connectivity. According to Du Plessis (2018), even though e-commerce is still in a developmental phase in the country, more South Africans are using online banking services, introduced in the 1990s. Approximately 14 million individuals accessed and used online banking services in 2014 (Mujinga, Eloff & Kroeze, 2018:2).

Business Report (2019) indicates that more people are using applications such as the e-Wallet banking service. *Business Report* mentions that in the last six months of 2018, customers transferred approximately ZAR 12.8 billion via e-Wallet services. Furthermore, research piloted by World Wide Worx (2018) reveals that electronic trade in South Africa is estimated to reach 1.4 percent in 2019. Zando and Spree are some of the online retailers preferred by the public. Spree electronic transactions increased by nearly 88 percent in 2017 (Du Plessis, 2018).

4.4 Policy and regulatory disparities and challenges among traditional and OTT technologies

This section discusses legislative disparities in the communications, broadcasting, tourism, and transport sectors. There have been various regulatory challenges since the introduction of OTT technologies. Brown (2014:357) indicates that OTT applications such as WhatsApp offer communications services similar to the traditional SMS and voice calls. The Electronic Communications Act, No. 36 of 2005 was promulgated to administer electronic communications services (Republic of South Africa, 2005). It requires traditional network operators to offer telecommunications services in accordance with the regulatory principles. The law, however, does not include OTT providers, mainly because in the course of its drafting, OTT technologies were not anticipated. Nonetheless, the framework of the Act is structured in such a way that it lacks the component of adaptive regulation (Darji et al., 2016:18).

Westerlund (2014) indicates that traditional broadcasting television is moving into online content streaming services. The Broadcasting Act, No. 4 of 1999, was promulgated to stimulate growth in broadcasting, promote competition and increase access of TV services to the general public (Republic of South Africa, 1999). OTT broadcasting providers are not obligated to operate under the ICASA Act, No. 13 of 2000, and Broadcasting Act, No. 4 of 1999. Furthermore, policy and regulation for online content streaming services have not yet been introduced (BusinessTech, 2018).

Darji et al. (2016:21) contend that the non-regulation of applications-based taxi services challenges metered taxi services. The National Land Transport Act. No. 4 of 2009, was intended to manage South African public taxi services (Republic of South Africa, 2009). However, the legislation excludes Uber and Taxify. Following the launch of Uber and Taxify, the authorities indicated their intention to amend the legislation to include the new internet-based taxi services (Appasamy, 2018:2).

Nieuwland and Van Melik (2018) indicate that the expansion of technology has remodelled the tourism sector, with the rise of disruptive tourism services. The Tourism Act, No. 3 of 2014, does not prohibit Airbnb operations or offer guidelines on taxation and letting of property, compared with regulated tourism establishments (Republic of South Africa, 2014b). The table overleaf illustrates the areas of regulation where

traditional operators are required to comply with various legislative prescripts which exclude OTT providers.

Table 4.1: Legislation variance among the traditional and OTT providers

Area of regulation and legislation	Traditional network operators	OTT providers
Registration of subscribers as mandated by **RICA, Act No. 70 of 2002**.	Registration of subscribers is a requirement for mobile and fixed service providers according to the legislation.	No compliance required in terms of subscriber registration as mandated by RICA Act, No. 70 of 2002.
The distribution of personal data as stipulated in **Act No. 4 of 2013 of (POPI)**.	Data may be disclosed or distributed with other individuals or groups upon obtaining the necessary authorised consent.	The legislation is not specific to OTT providers with regard to sharing of personal data.
Licensing for all ICT players as stated in the **Electronic Communications Act, No. 36 of 2005,** and the prescripts of the **Competition Act, No. 89 of 1998**.	Traditional network operators are required to comply with the country's licensing regime as well as competition laws.	OTT providers are not obligated to comply with licensing laws of the country.
Cyber security and privacy rules as indicated in the **Cyber Crimes and Cybersecurity Bill, 2017**, **RICA Act No. 70 of 2002, and POPI Act, No. 4 of 2013**.	Traditional operators are required to comply with the cyber and privacy regulations.	OTT providers are not required to comply with cyber and privacy rules.

Source: Shanapinda, 2018

The above table shows the areas of regulation and legislation where only traditional service providers are obliged to abide by the legislation. OTT providers are not obligated to conform with Electronic Communications Act, No. 36 of 2005, however the traditional network operators are mandated to conform to the prescripts of the Act.

4.5 The role of government in the adoption of policy and regulation on OTT applications

Broadcasting sphere: Since the introduction of OTT applications in the broadcasting sector, ICASA, the regulator, has signalled its intent to review television subscription amenities. The review is intended to focus on domination by individual service providers and the excessive tariffs of television subscription as well as on competition in the sector (Republic of South Africa, 2017a). Subsequent to the assessment on whether OTT applications should be subjected to regulation, ICASA in 2019 circulated the outcome of the review. ICASA asserted that OTT broadcasting services in South Africa were still

in the course of evolving and indicated that government was likely to intervene and develop regulations for online streaming services (however not at present) (Republic of South Africa, 2019a).

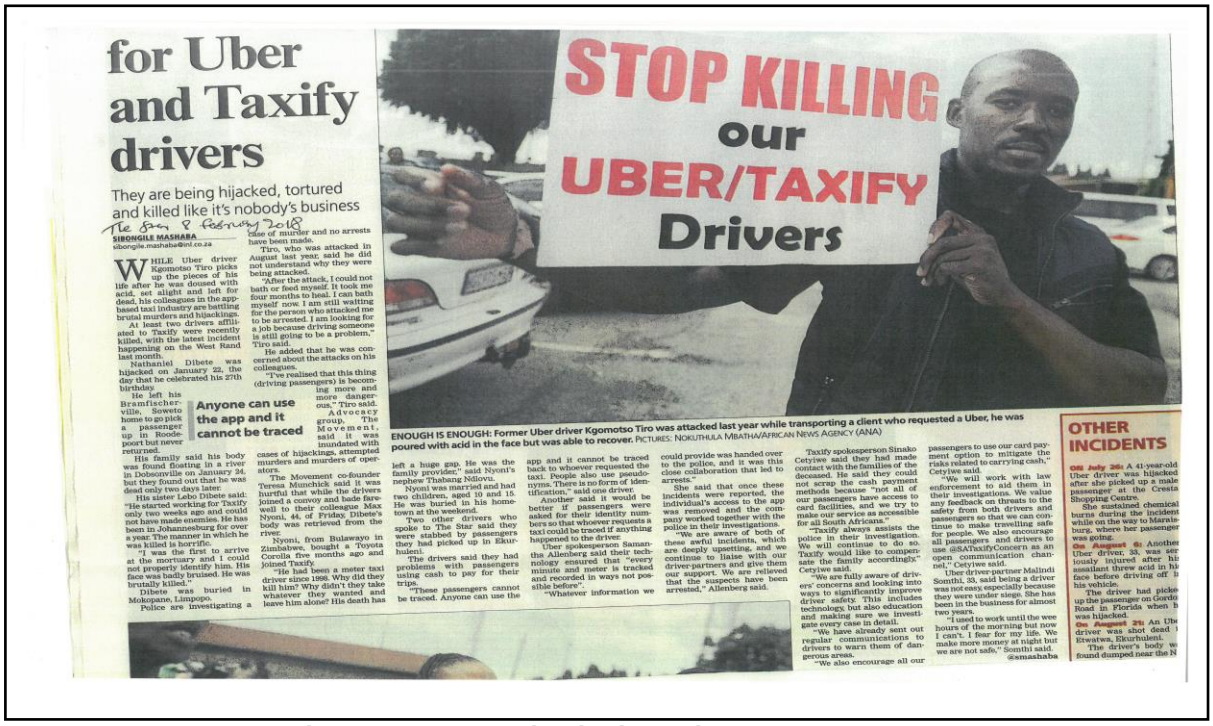
In addition, the Department of Communications (DoC) publicised the White Paper on Broadcasting Services in 2018 to concentrate on the diffusion of content and the evolution of innovative broadcasting technology (Republic of South Africa. Department of Communications, 2018). Furthermore, in 2018 the government of South Africa pronounced that from 1 April 2019, all online streaming services offered in the country, such as Netflix, would be required to comply with the country`s taxation regulations (De Villiers, 2018:29). The government reviewed and amended Value Added Tax (VAT) on electronic services as part of the adoption and implementation of OTT applications (Republic of South Africa, 2019c).

Communications sphere: In 2016 the Portfolio Committee of Telecommunications and Postal Services Parliamentary Monitoring Group held public hearings on communications OTT applications. The government acknowledged the objections from the sector and underscored the disparity of policy and regulation among OTT and traditional providers. For instance, licensed service providers are required to comply with interconnection, taxation and cyber security laws. The government recommended that regulation of OTT applications was premature. However, government indicated the importance of monitoring the impact of OTT applications and cautioned that the operations of OTT applications should not suppress ICT innovation.

Transportation sphere: The Competition Commission of South Africa (2018) received complaints from the metered taxi organisation, complaining of unfair competition in the sector since the launch of Uber and Taxify. The metered taxi organisation also complained about the low tariffs of Uber and Taxify. Metered taxi operators are obliged to abide by the taxi regulations (Republic of South Africa, 2009).

Geradin (as cited in Darji et al., 2016:24) notes that policy and regulation are essential to ensure that there is a level playing field for all taxi operators. In 2018 government published its intent to review the National Land Transport Act to include applications-based taxi services. The proposed law was approved by the National Council of Provinces Economic and Business Development Parliamentary Monitoring Group

(National Council of Provinces, 2018). Internet taxi applications led to hostile situations in the taxi industry as shown in Figure 4.3 below.



for Uber and Taxify drivers

They are being hijacked, tortured and killed like it's nobody's business

SIBONGILE MASHABA
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WHILE Uber driver Kgomotso Tiro picks up the pieces of his life after he was doused with acid, set alight and left for dead, his colleagues in the app-based taxi industry are battling brutal murders and hijackings.

At least two drivers affiliated to Taxify were recently killed, with the latest incident happening on the West Rand last month.

Nathaniel Dibete was hijacked on January 22, the day that he celebrated his 27th birthday.

He left his Bramfischerville, Soweto home to go pick a passenger up in Roodepoort but never returned.

His family said his body was found floating in a river in Dobsonville on January 24, but they found out that he was dead only two days later.

His sister Lebo Dibete said: "He started working for Taxify only two weeks ago and could not have made enemies. He has been in Johannesburg for over a year. The manner in which he was killed is horrific.

"I was the first to arrive at the mortuary and I could not properly identify him. His face was badly bruised. He was brutally killed."

Dibete was buried in Mokopane, Limpopo.

Police are investigating a case of murder and no arrests have been made.

Tiro, who was attacked in August last year, said he did not understand why they were being attacked.

"After the attack, I could not bath or feed myself. It took me four months to heal. I can bath myself now. I am still waiting for the person who attacked me to be arrested. I am looking for a job because driving someone is still going to be a problem," Tiro said.

He added that he was concerned about the attacks on his colleagues.

"I've realised that this thing (driving passengers) is becoming more and more dangerous," Tiro said.

Anyone can use the app and it cannot be traced

Advocacy group, The Movement, said it was inundated with cases of hijackings, attempted murders and murders of operators.

The Movement co-founder Teresa Munchick said it was hurtful that while the drivers joined a convoy and bade fare-well to their colleague Max Nyoni, 44, of Friday, Dibete's body was retrieved from the river.

Nyoni, from Bulawayo in Zimbabwe, bought a Toyota Corolla five months ago and joined Taxify.

"He had been a metar taxi driver since 1998. Why did they kill him? Why didn't they take whatever they wanted and leave him alone? His death has left a huge gap. He was the family provider," said Nyoni's nephew Thabang Ndlovu.

Nyoni was married and had two children, aged 10 and 15. He was buried in his home-town at the weekend.

Two other drivers who spoke to The Star said they were stabbed by passengers they had picked up in Ekurhuleni.

The drivers said they had problems with passengers using cash to pay for their trips.

"These passengers cannot be traced. Anyone can use the app and it cannot be traced back to whoever requested the taxi. People also use pseudonyms. There is no form of identification," said one driver.

Another said it would be better if passengers were asked for their identity numbers so that whoever requests a taxi could be traced if anything happened to the driver.

Uber spokesperson Samantha Allenberg said their technology ensured that "every minute and meter is tracked and recorded in ways not possible before".

"Whatever information we could provide was handed over to the police, and it was this close collaboration that led to arrests."

She said that once these incidents were reported, the individual's access to the app was removed and the company worked together with the police in their investigations.

"We are aware of both of these awful incidents, which are deeply upsetting, and we continue to liaise with our driver-partners and give them our support. We are relieved that the suspects have been arrested," Allenberg said.

Taxify spokesperson Sinako Cetyiwe said they had made contact with the families of the deceased. He said they could not scrap the cash payment methods because "not all of our passengers have access to card facilities, and we try to make our service as accessible for all South Africans."

"Taxify always assists the police in their investigation. We will continue to do so. Taxify would like to compensate the family accordingly," Cetyiwe said.

"We are fully aware of drivers' concerns and looking into ways to significantly improve driver safety. This includes technology, but also education and making sure we investigate every case in detail.

"We have already sent out regular communications to drivers to warn them of dangerous areas.

"We also encourage all our passengers to use our card payment option to mitigate the risks related to carrying cash," Cetyiwe said.

"We will work with law enforcement to aid them in their investigations. We value any feedback on threats to the safety from both drivers and passengers so that we can continue to make travelling safe for people. We also encourage all passengers and drivers to use @SATaxifyConcern as an open communication channel," Cetyiwe said.

Uber driver-partner Malindi Sonthi, 33, said being a driver was not easy especially because they were under siege. She has been in the business for almost two years.

"I used to work until the wee hours of the morning but now I can't. I fear for my life. We make more money at night but we are not safe," Sonthi said. @smashaba

ENOUGH IS ENOUGH: Former Uber driver Kgomotso Tiro was attacked last year while transporting a client who requested a Uber, he was poured with acid in the face but was able to recover. PICTURES: NOKUTHULA MBATHA/AFRICAN NEWS AGENCY (ANA)

STOP KILLING our UBER/TAXIFY Drivers

OTHER INCIDENTS

On July 26: A 41-year-old Uber driver was hijacked after she picked up a male passenger at the Cresta Shopping Centre.

She sustained chemical burns during the incident while on the way to Maraisburg, where her passenger was going.

On August 9: Another Uber driver, 33, was seriously injured after his assailant threw acid in his face before driving off in his vehicle.

The driver had picked up the passenger on Gordon Road in Florida when he was hijacked.

On August 21: An Uber driver was shot dead in Etwatwa, Ekurhuleni.

The driver's body was found dumped near the N

Figure 4:3 Aggression in the taxi sector

Source: Republic of South Africa. Department of Transport, 2018

The figure above illustrates the aggression in the taxi sector and emphasises the urgency for government to review and reassess its policies and regulations on public transport services (Republic of South Africa. Department of Transport, 2018).

Tourism sphere: Head (2019) mentions that in April 2019, the Department of Tourism (DoT) indicated its intent to review the Tourism Act, No. 3 of 2014, to legislate Airbnb services. The purpose of the revised legislation is to review government regulations for the tourism sector. The government wants to standardise the management and operations of Airbnb services and all other facilities comparable with tourism-based applications services. Furthermore, the Act will endorse the levelling of the playing field in the tourism sector (Republic of South Africa, 2019b).

4.6 Summary

OTT applications are revolutionising many economic sectors, as deliberated in this chapter. Nevertheless, there are visible policy and regulatory variances among OTT and traditional service providers. Currently, legislation does not cover OTT applications, as

outlined in the chapter. There are therefore objections from traditional service providers in various economic sectors such as transport, broadcasting and communication. However, government is developing regulations to ensure that all the sectors afford all players a level playing field, particularly in the tourism and transport sectors. In the communications arena, the authorities have indicated that they will continue to monitor the effects of OTT applications. The next chapter presents the data collection strategies, design and method for the research.

CHAPTER 5: RESEARCH DESIGN, METHODOLOGY AND DATA COLLECTION TOOLS

5.1 Introduction

This chapter considers the research design and method used in conducting the study. The study approach employed in the study supported the gathering of the research data, thus ensuring that the methodology responded to the study question and objectives. The chapter outlines the research methodology, design, sampling and data-collection instruments.

5.2 Research design

Kumar (2011:104) indicates that a study design is a tool that provides structure in gathering and analysing information. Kumar asserts that a study design is practical outline effected to resolve research problems authentically and rationally. This study on OTT communications services in essence is exploratory, since there is limited information on the subject. Stebbins (2001:2) indicates that exploratory research is intended to assess the theoretical base of the subject of enquiry. In addition, the exploratory study seeks to resolve the study question and objectives. Hence, this exploratory study intends to explore, consider and analyse data for OTT communications services.

5.3 Description of the unit of analysis

The unit of analysis in this study represent the objects of investigation of the study. It is important for the unit of analysis to be appropriate to the research topic, as revealed by Babbie and Mouton (2001:100). The key unit of analysis for the study is the South African ICT fraternity. The study comprised the DTPS, since the department mandated to develop ICT strategies and legislation on electronic communications amenities. It also included the DoC, since this department has the obligation to develop ICT broadcasting policy and legislation (Republic of South Africa, 2005). Thus, the functions of policy makers are significant, as their key aim is to serve public interests, as stated by Torjman (2005:4). The study further included ICASA, the regulator, since the intention of regulation is to enforce public policy for public interest (Republic of South Africa, 2000). The study also comprised mobile network operators (MNOs), as their functions involves the delivery of ICT communications services to end users. The MNOs are also

responsible for the administration of ICT infrastructure services (Body of European Regulators for Electronic Communications, 2016). Their functions also include implementing government policies for ICT communications services. The MNOs are key to the study since their operations involve the provision of application portals that enable OTT providers to deliver their services to the users (Monarat & Hitoshi, 2018). The study also comprised OTT corporations, as their operations are key to the research and involve the management and diffusion of OTT communications services. The study also included pay television service providers as their functions involve the provision of television (TV) services is similar to media-services content provided by Netflix and Showmax (Fowora et al. 2018:15). The study also comprised the association of internet service providers because of their role in promoting competition, innovation, policy and regulation for telecommunication services (Trbovic, 2018). Finally, consumers were part of this research as the study was undertaken solely in the interest of the public. Equally important – end users are the users of OTT applications and they possess the knowledge and understanding of the effects of OTT communications services applicable to the public. For example, information on tariffs, access to ICT services, and security matters.

5.4 Sampling

The study employed a qualitative research method as opposed to a quantitative research method. Qualitative study offers the tools and technologies to comprehend the research subject from the perspective of the study participants, the formulation and articulation of the responses (Marshall, 1996:522). The research adopted a non-probability sampling approach for the selection of the study participants whose proficiency and functions relate to the study (Kumar, 2011:187). The researcher used purposive sampling in choosing the study sample to attain significant information in response to the study objectives (Guetterman, 2015).

The participants of the study: The study comprised a principal economist, ICT policy and legislation specialist, broadcasting policy and legislation specialist, policy and research analyst, regulatory affairs expert, specialist policy analysis and research in the regulatory affairs, legal and regulatory expert, public policy analyst, public policy and government relations expert, technical regulatory affairs specialist, technology regulation specialist, connectivity and access policy specialist, pricing compliance and

regulatory economist, regulatory affairs advisor, and two end users. These participants were from both the private and public sectors and are involved with government ICT policy and regulatory affairs. Their functions involves engagement with government on the subject of legislation. The researcher deemed imperative to select the study sample based on an comprehension of the populace to realise the objective of the study (Babbie & Mouton, 2001:166). The research comprised 16 participants from government, the regulatory authority, mobile operators, OTT providers, and university students.

Officials from the following organisations responded to the study: one official from the Competition Commission, one official from the DTPS, one official from the DoC, one official from ICASA, one official from MultiChoice, one official from WhatsApp, one official from MTN, one official from Cell C, one official from Facebook, one official from Google, one official from the Internet Service Providers Association, one official from Telkom, two Vodacom officials, and two end users from the University of Pretoria. A list of the respondents and their organisations is attached as Appendix B.

5.5 Data collection

The next section discusses the data-collection approaches used to collect information for this research.

5.5.1 Data-collection approaches

Bengtsson (2016:10) states that data collected through qualitative methods has the ability to reveal important social world elements. A qualitative research uses a range of information collection methods that include individual interviews and group discussions. This study used both empirical and non-empirical methodology to gather information. The researcher conducted semi-structured interviews with the aid of an interview guide to gather empirical information, thus confirming that the main areas of the research were explored. Semi-structured interviews created a comfortable environment in which the participants and interviewer discussed the questions and responses. Semi-structured interviews were used since the data-collection approach allows for the amplification of information which is important to the research (Gill, Stewart, Treasure & Chadwick, 2008:291). Non-empirical data was gathered by means of a literature analysis, which included journal articles, reports and websites, both national and international. The methods used to gather the information are deliberated in the next section.

Secondary data

Secondary data for the study comprised the literature review and the legislative outline. Firstly, the literature analysis focused on the global context of OTT communications services. The literature review was sourced from journals, conference papers, reports from regulatory organisations, international organisations, newspapers, policy and working papers, and various internet sources. Secondary data was used to explore fundamental conceptions and the global context of OTT communications services.

Secondary data also outlined the progress on policy implementation, regulations and guidelines for OTT applications in various countries. Secondly, data was gathered from key pieces of Acts and national policies that are significant and relate to the topic.
The study deliberated on the South African Constitution, the Competition Act, the ICASA Act and the ECA Act. The study further discussed national policy programmes such as the NDP and the ICT Policy White Paper 2016.

Thirdly, ICT statistics were collected from ICASA and Statistics South Africa. Lastly, the researcher kept abreast of significant developments within the ICT arena, for example, the latest General Data Protection Regulation which came into effect in Europe on 25 May 2018 (European Commission, 2018), the taxation guidelines on OTT applications implemented in July 2018 in Uganda (Parliament of Uganda, 2018), and the amendment of VAT by the South African government to include taxation on the streaming of online content (Republic of South Africa, 2019c).

Primary data

The researcher collected primary data through semi-structured interviews. The interview questions were developed in relation to the guidance of the literature on OTT communications services. The researcher contacted all participants telephonically to arrange interviews. All the respondents were interviewed at their place and time of convenience. The respondents were interviewed at their places of work and university locations. During the interview processes the researcher described the objective of the research to the respondent as detailed on the consent form, which was endorsed by the university ethics committee. All the participants were requested to sign the consent form prior to the interview. This was done to give surety to the participants that their identities

would not be revealed, since in some cases the participants voiced their individual views and not the opinions of their organisations. This was also done to ensure participants' objectivity for the benefit and value of the study. It is important to understand that participants are obligated to their terms and conditions of employment. The researcher used the interview guide while conducting the interview. A copy of the research questions is attached as Appendix C.

All interviews were conducted face to face, with the exception of the participant from WhatsApp, since the respondent is based in the United Kingdom. The interview questions were emailed to the respondent and the interview was conducted telephonically. The researcher recorded all the interview sessions with the respondents on an audiotape recorder. The researcher also took notes manually to ensure that all information was eloquently documented as referred to by Sutton and Austin (2015:227). The researcher ensured that all information collected was saved, stored and locked for safety.

5.5.2 Data analysis

The study was analysed using the content analysis approach. Kumar (2011:229) refers to the qualitative content data exploration as an orderly process for data explanation. By using content analysis, the researcher intends to identify themes from information obtained from the study (Babbie & Mouton,2001:108). According to Elo and Kyngäs (2007:107), content analysis is a rational and impartial method for describing and measuring a study phenomenon. Content analysis methodology was applied to the collected data to formulate themes. The themes were constructed on the basis of the research question, objectives and literature analysis.

5.6 Limitations

There are various limitations to the study as discussed below.

- The literature review on OTT technologies that could have served as part of the study is, however, still limited, especially in respect of the paucity of journal articles on South African OTT communications services. The researcher had to depend on all sources of information that were available and accessible, such as working and policy papers, and newspaper and internet reports.

- Since ICT is ever evolving, much of the information can be considered outdated. There are global developments on the topic of OTT technologies, hence the researcher was constantly vigilant to keep well-informed of developments in the ICT sector. This challenge could have a bearing on the research, since some of the participants might not have been cognisant of the latest developments in the ICT industry.
- The sample could have included the players of the disruptive technologies in the tourism, transport, and e-commerce sectors. However, since the importance of this research is on the ICT sector, the discussions in this study on those arenas could serve as a point of reference for future studies.

5.7 Summary

This chapter discussed sampling methodologies, unit of analysis, and data-collection techniques employed to realise the intent of the study. The chapter outlined the methods used to gather primary and secondary data. Primary data was collected mainly through face-to-face interviews, with the exception of one participant. The chapter also discussed the population and sample of the research. It outlined the analytical technique, which was content analysis. Various limitations of the research were noted. The next chapter presents the research outcomes.

CHAPTER 6: PRESENTATION AND ANALYSIS OF RESEARCH RESULTS AND FINDINGS

6.1 Introduction

Chapter 5 discussed the study design, technique, sample and study population. Chapter 4 deliberated the advent of OTT communications services in South Africa. The chapter outlined disruptive technologies in the tourism, e-commerce and broadcasting arenas in South Africa. This chapter presents the outcomes of the research. The research was conducted to assess the need for government to develop policies and regulations for OTT communications services. Section 6.2 below lists the research questions, followed by participants' responses.

6.2 Presentation of results

This section presents the study outcomes emanating from the interviews conducted by the researcher. The presentation of the findings accords with the data-collection methods discussed in Chapter 5. The study questions were modelled on the research on OTT services carried out by the European Union in 2015 and Bhawan (2015). The results are discussed while ensuring the identities of participants remain confidential, indistinguishable and anonymous, thus confirming that the researcher complied with the ethical requirements for conducting the research.

6.2.1 Semi-structured interviews for OTT communications services

Question 1: Is it premature for South Africa to develop a regulatory and policy framework for OTT communications services, since internet access and penetration are still evolving?

The study participants outlined a range of answers to this question. The responses are deliberated below.

Firstly, an overwhelming majority of the participants responded that it was not premature. The responses emanated from the ICT policy and legislation specialist, broadcasting policy and legislation specialist, specialist policy analysis and research in regulatory affairs, principal economist, technical regulatory affairs specialist, and technology regulation specialist. South African traditional network operators possess the latest technology on their network infrastructures: fourth-generation technology (4G)

and long-term evolution technology. These have the capability to manage broadband demands, as underscored by the regulatory affairs expert. South Africa has a window of opportunity, not only to understand the ICT markets but also to design a policy and regulatory landscape aligned with the latest technology. The review and development of policy and regulation will provide assurance in respect of ensuring that the playing field is level to both OTT providers and traditional network operators. Equally important, the end users emphasised that since data tariffs are high, the development of policy and regulations could serve as an intervention mechanism to reduce data tariffs, as OTT applications are important in accessing online educational content.

Secondly, it is premature to develop policy and regulation for OTT communications services in South Africa. The policy and research analyst, public policy and government relations expert, connectivity and access policy specialist, and public policy analyst detailed that government ought to conduct studies to justify legislation development. An impact assessment is a more practicable option for assessing the effects of OTT applications on the economy. South Africa should not rush regulation and be at the forefront with regard to the implementation of regulation, as the country is experiencing internet penetration challenges. Furthermore, government ought to establish the purpose and outline intentions of regulating OTT applications.

Thirdly, consider light-touch regulation, according to the pricing compliance and regulatory economist, regulatory affairs advisor, and legal and regulatory expert. South Africa is an emerging country compared with other markets. The ICT sector is evolving, and stringent regulation could constrain innovation and have detrimental effects on competition. The country has not yet realised the benefits of OTT technologies and needs the resultant revolution.

Question 2: Should Government and the regulatory authority develop a legislative or regulatory outline that can accommodate and adapt to technology changes?

All participants indicated that government ought to develop future-based policy and regulation. Regulation ought not to be rigid, as technology develops rapidly. Policies and regulations ought to be future-oriented and aligned with ICT development. The public policy analyst emphasised that the country should delay implementation of policies and regulations as the ICT market is continually evolving. The country needs to keep abreast

of technology development, hence future-oriented strategies and regulation will generate and improve the prospects for the country on a large scale internationally. According to the public policy and government relation expert, the country entails guidelines that will not be obsolete by the time national parliament endorse them. Policy is long term, so academics and policy makers ought to consider the future and develop guidelines that are adaptable and have the capability to accommodate future ICT services.

Question 3: Do you agree that there is regulatory imbalance between traditional network operators and OTT providers? (i) How can the current legislative framework be applied to OTT services? (ii) What would be a suitable legislative framework to address both OTT providers and network operators?

The participants presented a range of answers to this question. Their responses are discussed below.

The majority of the respondents validated the presence of regulatory imbalance among OTT providers and network operators. The ICT sector is experiencing technology merging, and as a result the scope and landscape of competition between them OTT providers and traditional network providers is limited. The principal economist, the ICT policy and legislation specialist, the broadcasting policy and legislation specialist, the pricing compliance and regulatory economist, the connectivity and access policy specialist and the regulatory affairs expert indicated that equally traditional network operators and OTT providers offer virtually the same services. Therefore, both operators should be subjected to similar regulation. Government requires to develop a policy framework that will mandate OTT providers and traditional network operators to act in accordance with competition and compulsory requirements. Traditional network operators are obliged to conform with regulatory requirements such as quality of service and licence fees, while OTT providers are not mandated to conform with such obligations a point expressed by the technology regulation specialist, the regulatory affairs advisor, and the policy research and analyst.

However, the connectivity and access policy specialist, public policy analyst, public policy and government relations expert, and technical regulatory specialist noted that there was no evidence of regulatory imbalance among OTT providers and traditional service providers. Customers are paying for data services to access OTT applications.

Therefore, the revenue received from customers contributes to the revenue of traditional network providers.

(i) How can the current legislative framework be applied to OTT services?

The various responses from the participants are deliberated below.

Most of the respondents specified that it would be challenging to effect the current legislative framework to OTT communications services. The regulatory affairs advisor, legal and regulatory expert stated that the current policy framework was developed for traditional network operators only. The current legislation would entail to be reviewed since OTT communications services are digital. Therefore, OTT communications services can neither be aligned with nor integrated into the existing regulations, as also emphasised by the technical regulatory affairs specialist and the technology regulation specialist.

Nonetheless, the principal economist, policy and research analyst, end users, specialist policy analysis and research in regulatory affairs, ICT policy and legislation specialist and broadcasting policy and legislation specialist indicated that it was probable to effect the current legislation context to OTT communications services. The ECA Act, No. 36 of 2005 states that the regulator, ICASA, is authorised to regulate competition in terms of Chapter 10, Section 67 of the Act. The regulator can initiate a market analysis process to assess and evaluate the efficiency of competition in the ICT sector. Furthermore, the regulator can amend the legislation to accommodate the operations of OTT applications.

(ii) What can be a suitable legislative framework to address both OTT providers and network operators?

The participants of the study responded variously, and their responses are outlined below.

The majority of respondents stated that an appropriate legislative outline to address equally OTT providers and traditional network operators ought to comprise the following. Legislation should be able to adapt to new ICT technologies. Governments can develop partnerships or collaboration guidelines between traditional network operators and OTT providers, a point made by the legal and regulatory expert, the broadcasting legislation specialist and the end users. The ICT policy and legislation specialist revealed that the

country needs to review the current laws to assess their relevance to new digital technology. Regulations should incorporate issues such as quality of services, legal interception, and tax requirements for both traditional network operators and OTT providers. The principal economist stated that ICT regulations ought to be technology neutral. Furthermore, the regulator, ICASA, should revise the ICASA Act No. 13 of 2000 to include the services of both traditional network operators and OTT providers, a fact emphasised by the specialist policy analysis and research in regulatory affairs.

The connectivity and access policy specialist, public policy analyst, public policy and government relations expert, technical regulatory specialist, and technology regulation specialist stated that there was no suitable legislation that could accommodate both OTT and network operators. Policy and regulation ought to be relaxed in respect of traditional network operators, as OTT applications are substitutes for electronic communications services. The ICT sector has offered end users with several options of communications services and the sector does not experience any competition problems.

Question 4: Should OTT providers be subjected to a licensing regime in their country of origin or in countries in which they operate?

A range of responses to this question is discussed below.

Local licensing is a practical option for OTT providers. Regulation is a means which government use to ensure that network providers are accountable and comply with national laws when providing their services to the general public. Since OTT providers conduct their operations in South Africa, licensing them here would allow government to control their operations. OTT operations has a bearing on the country's economy, therefore government has the obligation of licensing OTT providers. However, government ought to investigate an applicable licensing mechanism, since most OTT providers are based in foreign countries. The above responses came from the principal economist, pricing compliance and regulatory economist, technology regulation specialist, policy research and analyst, ICT policy and legislation specialist, broadcasting policy and legislation specialist, end users, and legal and regulatory expert.

OTT providers should not be licensed, according to the connectivity and access policy specialist, public policy analyst, technical regulatory affairs specialist, and public policy

and government relations expert. Since the ICT market is changing and dynamic, it would be problematic to enforce a licensing regime for OTT communications services. Government should rather concentrate on the social benefits generated by OTT applications.

Combined licensing is a practical option for OTT providers, according to the regulatory affairs expert, regulatory affairs advisor and specialist policy analysis and research in regulatory affairs. Cross-boundary guidelines, implementation and compliance are achievable.

Question 5: Should Government force OTT providers to reimburse network providers for the use of their infrastructure?

The participants of the offered a range of responses to this question. The answers are deliberated below.

The participants agreed, stated that Government ought to develop a structures for repayment among traditional network operators and OTT providers as emphasised by the principal economist, ICT policy and legislation specialist, broadcasting policy and legislation specialist, end users, regulatory affairs expert, pricing compliance and regulatory economist, and the specialist policy analysis and research in regulatory affairs. Reimbursement is essential, since it is biased for OTT providers to use the network operators' infrastructures without reimbursing them. However, reimbursement should be done practically for the sake of innovation.

The participants disagreed, the connectivity and access policy specialist, public policy analyst, and the public policy and government relations expert stated that government should not force OTT providers to compensate network providers for the use of their infrastructure. Traditional network operators are reimbursed in a way, since the demand for data is escalating. Traditional network operators recover internet connection expenses through data sales and thus earn data revenue. The notion of OTT providers' compensating traditional network operators would not be a suitable commercial practice.

Reimbursement should be decided by both OTT and traditional network operators. The concept of commercial agreement and not enforced regulation should apply with regard to reimbursement. The government should not drive away innovative services by forcing

OTT providers to compensate traditional operators for use of their infrastructure. The responses emanate from the technical regulatory affairs specialist, technology regulation specialist, legal and regulatory expert, regulatory affairs advisor and policy and research analyst.

Question 6: What are the opportunities and effects associated with the emergence of OTT communications services for South Africa. (i) Do you think OTT communications services bring any harm to the South African fiscus, since they are not paying any taxes for their operations? (ii) What could be the impact on the economy?

Opportunities: All participants indicated that the advent of OTT technologies has changed the livelihood of ordinary citizens. Most people have smartphones indicating that OTT communications services have reduced the digital divide. Citizens at grassroots level are able to call and message one another. The applications aid entrepreneurship and innovation and support business advertisements through Instagram and Facebook applications. OTT applications contributed to reducing the cost of doing business. Their applications are useful tools for SMMEs, since the applications enable them to have access to national and international markets. Medical technology services have become available through OTT applications, since doctors can organise face time with other doctors in a situation where they require assistance or guidance. In the banking sector, the transfer of money has turn out to be easy, effective and economical, thus confirming that communities in rural areas can also enjoy and access essential services. The end users noted that compared with the communications services offered by traditional network operators, OTT applications such as Facebook, Twitter and Instagram have stimulated the sharing of information, thus promoting the leaning and knowledge economy. Data is the currency of today, and the Internet makes information readily available. The public access information during their leisure time. OTT applications build democracy, since citizens are at liberty to voice their opinions; however, freedom of speech has its own limits.

Effects: OTT providers do not invest in network systems of traditional network operators and that decreases the returns of network operators. Traditional operators' access to cash to maintain their investment is lowered, and in the long term this will have an adverse impact. OTT applications have generated constraints on network capacity, since traffic has increased and thus affected communities in accessing emergency

facilities such as the fire brigade and police services. Communities are confronted with difficulties such as scams, illegal sites, trafficking of children and unreliable business practices, as OTT applications have attracted cybercrime. OTT applications are not interoperable, for example, with a WhatsApp call, you cannot call somebody who is not on WhatsApp. Individuals need to be on similar platform to be able to call each other. The responses emanated from all participants.

(i) Do OTT services bring any harm to the South African fiscus, since they are not paying any taxes for their operations?

The respondents of the research provided various answers to the question and these are discussed below.

The majority of participants agreed that government was losing taxes since OTT operations are not subjected to taxation rules. Government should develop guidelines and mechanisms for OTT providers to reimburse taxation levies, specifically Value Added Tax (VAT), an opinion underscored by the technical regulatory affairs specialist, end users, ICT policy and legislation specialist, policy and research analyst, specialist policy analysis and research in regulatory affairs, and the broadcasting policy and legislation specialist.

The participants disagreed, OTT communications services do not bring harm to the South African fiscus, according to the connectivity and access policy specialist, public policy analyst, and the public policy and government relations expert. The operations of OTT applications stimulate economic activity. ICT contributed almost 2.5 percent to the GDP in 2012, which is close to ZAR 60 billion. Some of the funds which traditional network operators collect are contributed towards VAT. For example, Uber is a listed transport OTT service business organisation in South Africa and has financial records. The workers of Uber contribute to the South African economy and Uber compensate taxes in South African.

(ii) What could be the impact on the economy?

All the participants stated that non-taxation of OTT applications could impact on the growth of the economy and could have long-term effects. The incapability to increase the GDP has an effect on the economy. The end users stated that if all the OTT providers

were contributing towards taxation, the government can generate programmes that would support the country in challenging the unemployment rate. The implementation of regulation would ensure that both OTT providers and traditional network operators impact positively to the growing of the economy. The contribution of OTT providers to the fiscus could assist the country in challenging difficulties of imbalances, particularly in the ICT sphere. Taxes paid by OTT providers could be utilised for improving rural areas. However, the respondents also highlighted that the operation of OTT applications impacts the economy positively, since OTT applications have provided business platforms for SMMEs, as indicated by the public policy analyst and policy and research analyst.

Question 7: Would it be difficult to regulate OTT communications services since they have no legal definition?

The participants gave a range of responses to this question. The answers are discussed below.

Disagreed, it will not be complex nor difficult to regulate OTT communications services since the OTT communication services have no legal definition. The majority of participants indicated that government needs to amend the legislation. The government ought to issue a ministerial policy direction to assess the definition of electronic communications services. The ICT policy and legislation specialist, broadcasting policy and legislation specialist, principal economist, regulatory affairs expert, and end-users indicated that government could interrogate the approaches of other countries which have implemented policy and regulation on this particular matter. Furthermore, the authority could also study the work undertaken by the International Telecommunications Union.

Agreed, it will be difficult to regulate OTT communications services, since they have no legal definition. This was expressed by the connectivity and access policy specialist, public policy analyst, the public policy and government relations expert, technical regulatory affairs specialist, technology regulation specialist, and legal and regulatory expert. The South African legal context is static, while technology and markets are dynamic. The definition of OTT applications requires to be modified to the South African setting in order to realise the purposes of regulation.

Question 8: Will regulation have an effect on technology innovation and therefore curtail competition in the ICT sector?

The respondents presented a range of responses to this question. The answers are deliberated below.

Disagreed, according to the majority of participants. South Africa has a neutral technology licensing system, and government can implement light-touch regulation that does not militate against innovation of ICT development, a view highlighted by the principal economist. Regulations can improve technology and competition, so long as they are appropriately effected. Regulation is not implemented to suppress innovation; regulation is intended to protect the consumer and generate an enabling atmosphere, according to the ICT policy and legislation specialist, broadcasting policy and legislation specialist, end users, regulatory affairs expert, legal and regulatory expert, principal economist, regulatory affairs advisor, and specialist policy analysis and research in regulatory affairs.

Agreed, as stated by the pricing compliance and regulatory economist, the connectivity and access policy specialist, public policy analyst, and the public policy and government relations expert. Regulation can discourage competition and impact competition. Government does not require to over-regulate and instigate an environment where network providers are confined and operate in rigid ways, thus impacting negatively on innovation prospects. In most instances, outdated approaches of regulation slow down invention and destruct the expansion of technology.

Agree, and Disagree, as indicated by the technical regulatory affairs specialist, technology regulation specialist, and policy and research analyst. Regulation can turn out to be a barrier to access, for instance, stringent licensing obligations and small providers who want to access the market. Again, compliance is another issue that contributes towards burdening investors. Further, there is an subject of balance of power, since regulation can adopt the character of a judge in power dynamics. Policy makers can also constrain technology by applying punitive policy outlines. Regulation is mostly about compliance and small enterprises find it problematic to conform, however the big providers at times do not obey with guidelines.

Question 9: Have there been security concerns for the country as OTT communications services are not regulated? (i) If yes, how should Government address those security concerns? (ii) For OTT providers residing outside South Africa, how can Government ensure that they comply?

Agreed, online digital operations have brought security concerns as revealed by the majority of respondents. The ICT policy and legislation specialist stated that South Africa is the second largest nation confronted by cybercrime. End users are challenged with problems of identity theft and scam. The legal and regulatory expert articulated that cybercrime is a threat to communities, as public information can be transferred without their knowledge. End users indicated that, there is disturbing illicit content on the network that children and minors can access, and which is unsuitable.

Disagreed, according to the connectivity and access policy specialist, public policy analyst, and public policy and government relations expert, indicated that there are no security concerns. They argued that it is generally a norm for the Internet to have certain security challenges. OTT applications have not generated cyber security concerns.

(i) How should government address those security concerns?

The respondents stated that government and other key participants ought to resolve security complications. Government ought to ascertain which organisation ought to manage ICT security issues. The authority should develop a fitting cyber security context for monitoring electronical systems. Government could also establish a component in the South African Police Service to oversee ICT crimes. The technical regulatory affairs specialist stated that the DTPS, DoC and related government entities mandated to administer internet operations and security matters should interact and cooperate to establish firewalls. Furthermore, the end users revealed that government ought to possess access to, or a specified level of management over, or enforce certain obligations on OTT providers. Government ought to also provide citizens with cyber-security awareness campaigns to assist them in understanding cyber threats and how to protect themselves against such threats.

(ii) For OTT providers residing outside South Africa, how can government ensure that they comply?

The respondents stated that South Africa, as part of the international world, cannot develop regulations in seclusion. The country needs to monitor and observe global cybercrime trends. Government ought to instigate cross-border partnerships to challenge cybercrime issues. Harmonisation of cybercrime guidelines is essential among countries, particularly on the African continent. For example, South Africa can learn from the European Union, where Facebook is required to construct a server and the member countries and government has the right to access the server, a point highlighted by the ICT policy and legislation specialist and broadcasting policy and legislation specialist. Government ought to challenge cyber security matters by developing a cybersecurity and cybercrimes bill. The technical regulatory affairs specialist stated that traditional network operators could block OTT providers on their network as penalty for non-compliance if they did not comply with the measures imposed by the government.

Question 10: Do OTT communications services promote or stimulate demand for data in South Africa? (i) If yes, how? (ii) If no, why?

All respondents indicated that OTT communications services encourage and promote demand for data in South Africa. The public has transformed, as the society wish to be knowledgeable about the latest developments in the world, an opinion shared by the principal economist. Mobile devices have inspired end users to require data to use their applications. The end users and the technical regulatory affairs specialist emphasised that there is more demand for data services than voice services. The regulatory advisor expert highlighted that since the launch of OTT communications services, traditional network operators have experienced massive sales of data – an approximate 30 percent rise month to month.

Question 11: What is your view on traffic management practices? Are there reasonable or consistent approaches, especially relating to OTT providers?

According to the ICT policy and legislation specialist, broadcasting policy and legislation specialist, and the legal and regulatory expert, government should develop guidelines for traffic management. Traditional network operators are required to operate under the

prescripts which are determined by the authority. However, a majority of the respondents indicated that network operators should plan for capacity, since traffic on the network is increasing owing to the operations of the OTT applications. They further stated that net neutrality is part of traffic management, hence the requirement to develop legislation for net neutrality to avoid a situation where the Internet collapses. The technology regulation specialist emphasised that traditional network operators cannot conduct their businesses without ensuring that traffic is managed effectively. South Africa needs to find suitable approaches to develop net neutrality guidelines. Equality on the network is required for both OTT providers and traditional network operators, so that there is sufficient space for operation.

Question 12: Is there a need for changes in the tariff regulatory framework for communications services since the emergence of OTT services?

An overwhelming majority of the respondents concurred with the view that there is a need for tariff regulatory analysis. An symmetry is essential among competition and compliance. Government can require reimbursement from OTT communications services and subsidise the cost of data. There is scope for a tariff regulatory outline, as a data market inquiry is underway in South Africa. The principal economist emphasised that traditional network operators are not receiving an actual return to preserve their infrastructure, as the tariff structures of OTT technologies are not transparent. However, the public policy and government relations expert, the connectivity and access policy specialist, and the technical regulatory affairs specialist indicated that there was no requisite to assess the tariff regulatory context, as OTT providers attain their returns mostly through marketing.

Question 13: What is in the best interest of South African consumers since the evolution of OTT communications services?

All the participants stated that South Africa has several socio-development strategies that use the OTT communications services platform. Regulations ought to resolve socio-economic challenges, for example, alleviating poverty and ensuring that every citizen has access to ICT services. Small enterprises use OTT platforms to advertise their businesses and sell their merchandise. OTT communications services support rural development, as communities in rural areas, particularly schools and agricultural

projects, use Facebook for lessons and sharing of school information and agriculture-related activities. The services give consumers access to direct markets. Therefore, end users have been afforded an opportunity to make choices, since they possess access to content and markets.

Question 14: State any other negative or positive effects of OTT communications services that would need government intervention, not referring to the above questions.

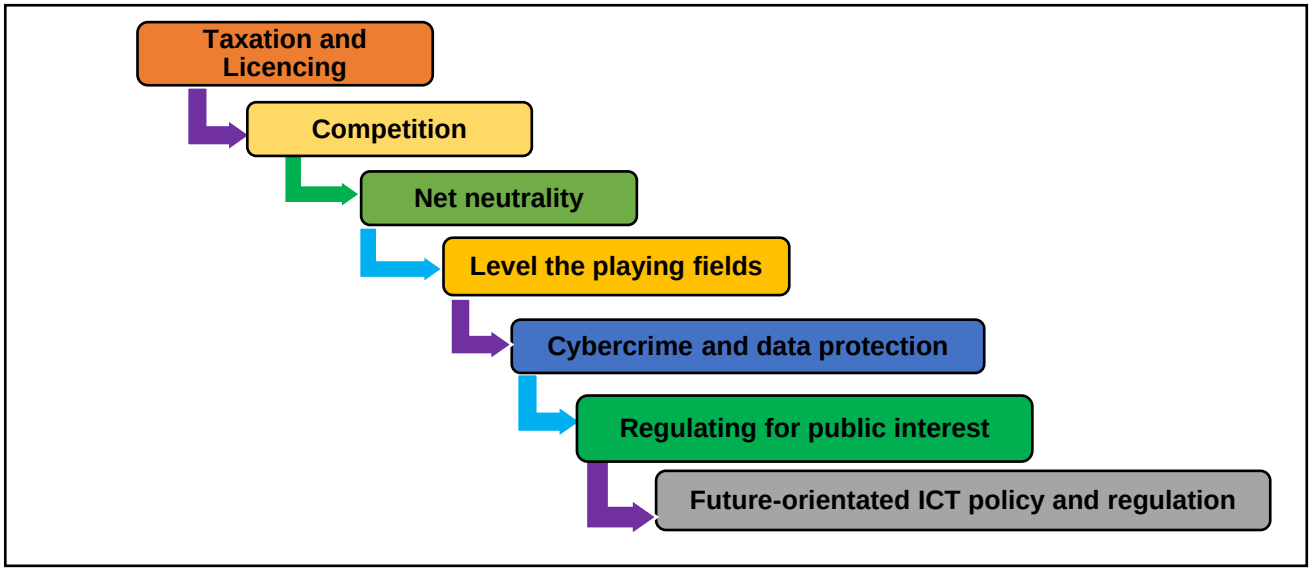
All respondents indicated that OTT services have had overwhelmingly positive effects on the public. However, the respondents also indicated that South Africa needs to advance ICT technology and start building skills to resolve and confront digital challenges and cyber threats. Government should establish mechanisms of localising OTT communications services. The advancement of infrastructure systems has become a challenge since OTT providers come into the ICT market. Traditional network operators ought to be reimbursed for their investment, an opinion stated by the technical regulatory affairs specialist. Government ought to commence a process of developing guidelines on safety of data and taxation.

Question 15: Are there any other issues which might have a bearing on the subject discussed?

An overwhelming majority of the participants disclosed that they did not have more information on the topic, other than the issues discussed. However, the technology regulation specialist stated that government should study the research that other countries have conducted on OTT communications services. The respondent further advised the researcher to engage the students, since they are users of OTT applications. In addition, students understand the dynamics of OTT applications. However, the pricing compliance and regulatory economist indicated that there are various traditional network operators in South Africa who have partnered with OTT providers. Government should ascertain how those relationships were formed. Did they circumvent the present regulations? What are the government's intents on OTT communications services?

6.3 Analysis and interpretation of the research results

This section presents a comprehensive analysis of the research results discussed in Section 6.2 above. The analysis is discussed by integrating the literature analysis in Chapter 2, legislative perspective in Chapter 3, and context of the emergence of OTT communications services in South Africa in Chapter 4. The data will be analysed through various themes emanating from the responses and aligned with the objectives and purpose of the study as shown in Figure 6.1 below.



***F*igure 6.1: Key themes**

Source: Developed by the researcher

The above figure illustrates the main themes arising from the study. The themes were aligned with the interview questions. Future-oriented ICT policy and regulation emanated from Questions 1, 2, 8 and 9. Level the playing fields derives from Questions 3, 7 and 15. Net neutrality arises from Questions 4, 5 and 11. Taxation and licensing obligations stem from Questions 4 and 6. Cybercrime and data protection comes from Questions 9 And 10. Regulating for public interest originates from Questions 6, 10, 13, 14 and 15. Lastly, competition comes from Questions 8 and 12.

The section below furnishes a detailed discussion of the research themes.

6.3.1 Future-oriented ICT policy and regulation

The development of policy and regulation is fundamental, and the study has confirmed that it is not premature for South Africa to develop policy and regulation on OTT

communications services. The research disclosed that ICT regulations in South Africa were established for conventional technology and not for digital technology. Parcu and Silvestri (2014) point out that regulation is imperative for the development of innovative and reliable ICT technologies. The study also revealed that authorities need to develop ICT policies that are future oriented. The study has underscored the importance of instituting legislation which can forecast and pre-empt new technologies. Alinaghian et al. (2011:965) indicate that ICT policies ought to be revolutionary and take into consideration that ICT is ever evolving. The study further noted that policy makers should conduct studies to understand and forecast technology developments worldwide, hence the importance of constructing forward-looking policies. Of greater significance, Hanna (2018:4) indicates that the development of ICT digital applications has generated problems in the form of big data, cybercrime and data protection, hence it is critical for authorities to construct agile legislation. Furthermore, according to the German Network Agency, policy and regulation of ICT communications ought to adapt to innovative technology services (Bundesnetzagentur, 2016).

6.3.2 Levelling the playing field

Kittl et al. (2016:17) state that a level playing field implies that network operators providing similar communications services in terms of functionality ought to be subject to similar regulatory prescripts. The study disclosed that there is regulatory inequality among OTT providers and traditional network operators. The OTT providers are perceived as electronic communications services. The services of both traditional network operators and OTT providers are practically similar, as contended by Gillward et al. (2018:79). CUTS International (2018) asserts that the issue of levelling the playing field for all providers in the market is not limited to the communications sector, but also to the tourism, broadcasting, and transport sectors. The researcher outlines below various pieces of legislation which exclude OTT applications and/or disruptive services to reveal the predominance of an uneven playing field in South Africa as informed by the study in Chapters 3 and 4, and according to the outcomes of the study.

- Traditional network operators in the communications arena are required to abide by the Electronic Communications Act, No. 36 of 2005, while OTT providers are not required to confirm to the prescripts of this legislation (Republic of South Africa, 2005).

- The Republic of South Africa (1999) Broadcasting Act, No. 4 of 1999 and the ICASA Act, No. 13 of 2000 exclude regulations for OTT broadcasting providers, while the conventional broadcasting services are required to comply with the law (Republic of South Africa, 2000).
- The National Land and Transport Act No. 4 of 2009 was promulgated to manage South African public taxi services; however, the legislation excludes Uber and Taxify (Republic of South Africa, 2009).
- Lastly, the Tourism Act, No. 3 of 2014 excludes Airbnb and only comprises traditional commercial tourism business (Republic of South Africa,2014b).

Thus, according to Fundación Telefónica (2016:13), the concept of symmetry for all ICT service providers in the sector implies that guidelines, laws and regulations should be designed fairly and equitably for all providers in all sectors to stimulate innovation and competition.

6.3.3 Net neutrality

The study revealed that authorities should develop guidelines on traffic management. The study underscored the importance of developing net neutrality guidelines to ensure that all content providers on the network are considered equally. Sawe (2016:379 indicates that online activities ought to be managed in the same way, despite the content conveyed. According to the literature reviewed in Chapter 2, several countries globally have implemented net neutrality guidelines. Chile is among the countries to have implemented net neutrality laws (Kamal, 2016).

The study thus recommends the enactment of net neutrality laws in South Africa. However, in the USA, net neutrality laws were enacted in 2015 and retracted in 2017. The retraction of laws enabled traditional network operators to give precedence to online content on the network (Radia & Melugin, 2017). Nonetheless, implementing net neutrality laws is significant and Audibert and Murray (2016:127) indicate that the principle of internet neutrality encourages competition, since customers are given the opportunity to choose a network provider and/or services that seem best and are of interest to them.

6.3.4 Taxation and licensing obligations

According to the study, government is losing taxes, since most OTT operations are not subjected to taxation. The literature review revealed countries globally which have enforced taxation on OTT applications. Stork and Esselaar (2019) state that in 2018, Benin implemented taxation guidelines on OTT applications. Again in 2018, in Uganda, the government introduced taxation guidelines on OTT communications services (Parliament of Uganda, 2018). South Africa similarly is endeavouring to provide guidelines on the taxation of OTT applications. Government has announced that foreign content providers will be subject to taxation regulations from 1 April 2019 (De Villiers, 2018).The study also revealed that even though the government has progressed with taxation guidelines for online streaming services, taxation guidelines should be established for all OTT providers to pay VAT. Anderson (2016) indicates that worldwide, authorities are confronted with the problem of instituting appropriate taxation for OTT providers.

Furthermore, the study revealed that OTT providers need to be licensed in South Africa. Regulation is a measure government enforces to ensure that all network operators are held responsible for their operations. Hence, in 2018, the government of Kenya announced that any member of society intending to transmit any media content through smart devices should apply for a licence (Article 19, 2018). Mandel and Long (2018) note that in 2017, OTT providers in Thailand were obligated to register with the authorities for authorisation to provide their services in the country.

6.3.5 Cybercrime and data protection

The study emphasised the seriousness of cyber security challenges in South Africa. The study also highlighted the importance for government to initiate cross-border partnerships to resolve cybercrime. Mare and Duncan (2015) indicate that RICA was instituted in 2002 as a result of unlawful operations instigated by modern technology communications services. Pistorius (2009:6) asserts that RICA legislation was established to focus on the telecommunications and internet service providers. Sutherland (2017:83) emphasises that the Internet has confronted authorities with cybercrime challenges worldwide.

Similarly, Grober et al. (2011:113) reveal that the objective of the Cyber Crimes and Cyber Security Bill of 2017 is to safeguard citizens from cybercrime. However, the authorities need to strengthen adherence to this legislation by all online content providers. Furthermore, the study disclosed that government needs to tighten legislation on the security of personal data. Thus, Grünwald and Nussing (2016) note the European Union has implemented data-protection guidelines to safeguard personal information of the public. In Brazil, the *Marco Civil da Internet* was developed for the same reason (International Telecommunications Union, 2017a). This was supported by the policy experts, regulatory experts, and end users who participated in the study.

6.3.6 Regulating for public interest

The study disclosed that regulation should be established for the benefit of the public, since OTT applications stimulate demand for data, thus contributing to the revenue of traditional network providers. Accordingly, the objectives of regulation should be to address socio-economic difficulties such as high unemployment and poverty. The study further highlighted that regulation should ensure that communities have access to ICT services and OTT applications. Hence the theory of public interest of Arthur Cecil Pigou supports the notion of developing policy and regulation for the benefit of communities (Levine & Forrence, 1990:169). Potter et al. (2014:639) indicate that regulation in the framework of public interest theory endeavours to protect the safety and welfare of communities.

Furthermore, Carrigan and Coglianese (2016:6) note Stigler's theory of economic regulation, which reveals that in most instances, the powerful and influential members of society have the power to influence the direction of policy and regulation. They indicate that such members of society are concerned only with the preservation for their own interests and not the interests of the general public. Lastly, Esselaar and Stork (2018) reveal that OTT applications enhance the livelihood of citizens by enabling access to ICT services. Hence the study emphasises that policy on and regulation of OTT applications should be effected for citizens to be the major beneficiaries.

6.3.7 Competition

According to the study, the regulation of OTT applications can enhance competition when implemented appropriately. Indeed, Gillward et al. (2012) affirm that a lack of policy and regulation can lead to markets that are uncompetitive and to unproductive regulatory systems. The study indicated that tariffs structures of OTT technologies are not evident and there is a need for government to review the tariff regulatory framework. Nicol (2003) argues that the implementation of policy and regulatory mechanisms ought to be effected with the purpose of enhancing competition in the ICT sector. Even more importantly, the Body of European Regulators for Electronic Communications (2016) indicates that when similar communications services are treated in a different way in terms of regulation, it can result in unfair competition. Roberts (2017) indicates that the Competition Act, No. 89 of 1998 was promulgated to confirm the country`s commercial sector is protected against monopoly and unfair competition (Republic of South Africa, 1998). Hence, in most economies, policy and regulation in the communications sector are generally applied where there are indications of market inadequacies (Szkudlarek, 2014:77). The study revealed that governments ought to attest that competition in all sectors is both practicable and impartial. Furthermore, authorities ought to confirm that the operations of both OTT providers and traditional operators are conducted equitably, without dominance.

6.4 Summary

Chapter 6 presented the research results emanating from the semi-structured interviews. Primary data collected from the interviews was grouped according to themes as informed by content analysis methodology (Elo & Kyngäs, 2007:107). The responses from the study were diverse, and various issues were raised; hence the chapter gave a synthesis of the outcomes. The analysis disclosed that it is not premature to develop policy for and regulation of OTT communications services in South Africa. The study also indicated that legislation in South Africa excludes OTT applications, not only in the communications sector but also in the tourism and transport sectors. Chapter 7 will presents a summary, recommendations and conclusions.

CHAPTER 7: CONCLUSIONS, SUMMARY AND RECOMMENDATIONS

7.1 Summary

Chapter 7 discusses the key points accentuated in the study as extrapolated from the previous six chapters. They comprised a literature review, policy and legislative structure, the development of OTT technologies in South Africa, the study design and methodology, and concluded with the study outcomes and analysis.

7.2 Introduction

Diga and May (2016:1) assert that ICT has transformed the world immensely, especially internet services. Communication and information sharing has become essential to every single person in the world. The advent of OTT communications services is perhaps the most prevalent ICT development globally. OTT applications have transformed methods of communications and have enabled people worldwide to possess access to data flow within countries and across borders with ease (Commonwealth Telecommunications Organisation, 2018).

However, even though OTT applications have changed the lives of many people, in South Africa traditional network operators had objections concerning their operation. They argued that the operations of OTT providers had an adverse impact on their own operations, since OTT providers were not bound by regulation (Robb & Ramkolowan, 2016). Globally, governments are required to assess the procedural, legal, governance, competitive and social issues of ICT electronic communication services. For citizens to enjoy ICT services, regulators and policy makers are required to have adequate comprehension of the social and economic impact of ICT and internet applications (Organisation for Economic Co-operation and Development, 2016:46). This will contribute to capacitating governments with mechanisms for implementing well-informed policy and regulatory decisions.

The purpose of the research was to explore the ICT sector and assess the requisite for policy and regulation of OTT communications services in South Africa.

7.3 Literature review and legislative outline

Chapter 2 presented a comprehensive literature analysis on OTT communications services. Definitions from various scholars of various concepts were discussed, among them, OTT, internet, big data and net neutrality. In addition, various techniques and approaches were considered in the application and implementation of OTT services. The literature review discussed those countries where guidelines on taxation and net neutrality for OTT applications have been implemented. For example, Uganda has implemented taxation guidelines on OTT providers such as Facebook and WhatsApp (Parliament of Uganda, 2018). The chapter further outlined and clarified the theories reinforcing the subject of study. The theory of economic regulation revealed the significance of developing regulations in the interest of the public and not for self-enrichment (De Hertog, 2010:4). Chapter 3 discussed legislative frameworks and policies pertaining to the topic. International and regional organisations instituted for the purpose of facilitating ICT programmes, namely, the ITU, SADC and CRASA, were deliberated. The legislative framework commenced by outlining the Constitution (1996) as the main South African statute. In addition, key ICT legislation which regulates communications services were deliberated, such as the Electronic Communications Act, No. 36 of 2005 and the ICASA Act, No. 13 of 2000. The chapter then addressed the NDP, since it is a fundamental policy programme intended to grow not only ICT but the entire South African economy.

7.4 The emergence of OTT communications services in South Africa

The emergence of OTT communications services was the focus of Chapter 4. The chapter commenced with a discussion of the context of the South African ICT sector. The chapter revealed the context of internet access in South Africa, since internet is important to the evolution of OTT applications. The researcher gave a comprehensive description of internet-based applications in the tourism, transport, and e-commerce sectors, as their operations are comparable with OTT applications in the ICT sector.

7.5 Data collections and analysis

Chapter 5 outlined the research methodology the researcher used to resolve the research problem. Data-collection strategies were deliberated in detail as well as the

population and sample of the research. The chapter further discussed data analysis techniques and the limitations of the study. The study was conducted by means of a qualitative research methodology and used the content analysis method. Empirical data was collected through semi-structured interviews, while secondary data was gathered data by means of journals articles, newspaper reports and reports from international regulatory agencies.

7.6 Study findings

Chapter 6 underscored the study findings, focusing on several themes aligned with the interview questions.

Data collected from primary sources indicated that it is not premature to develop policies and regulations for OTT applications. The study findings from both primary and secondary data disclosed that the world is stirring in the path of digital technology. However, regulations in respect of ICT services in South Africa are still based on analogue technology. The study revealed that the rapid transformation of technology has had an impact on conforming that the playing field is even between OTT providers and traditional network operators. It further disclosed that government require to review ICT guidelines to clarify the concept of OTT communications services, as they are perceived to be electronic communications services. Primary data revealed that the term requires an appropriate definition within the framework of the South African ICT landscape. Furthermore, primary and secondary data highlighted the importance of government in drafting appropriate collaborative guidelines among OTT providers and traditional network operators. Notably, the research emphasised that government ought to acknowledge the value and benefits of OTT applications for the general public.

7.7 Summary of the results of the study

This section discusses a summary of the research findings in respect of the need for South Africa to develop policies and regulations for OTT communications services. Below is a discussion of the study objectives derived from literature, the legislative framework and the research findings.

7.7.1 Objective 1: The emergence of OTT communications services in South Africa and worldwide

The focus of the first objective was the advent of OTT communications services in South Africa and internationally. The literature review revealed that Singapore and Kenya are among the countries where OTT applications have been launched and embraced, predominately in the communications and broadcasting services. In South Africa, the public have access to OTT applications and the demand for data has intensified, compared with conventional electronic communications services such as voice calling and SMS. This confirms that the public have embraced the emergence of OTT applications as disclosed by the outcome of the study. Mxit was the first OTT communications application in 2005. In the broadcasting sphere, Showmax was launched in 2015, followed by Netflix in 2016. Internet-based applications services were introduced in the transport sector, with Uber and Taxify in 2013. In the tourism sector, Airbnb was launched in the country in 2015.

7.7.2 Objective 2: Current ICT legislation and policy framework in South Africa

The second objective focused mainly on policy and legislation. The legislative framework outlined South Africa's ICT laws pertinent to OTT technologies. The Electronic Communications Act, No. 36 of 2005 and the ICASA Act, No. 13 of 2000 constitute the guiding legislation for electronic communications services. The Electronic Communications Act, No. 25 of 2002 is aimed to provide guidelines on cyber and e-business services. However, the study revealed that in South Africa, ICT legislation excludes OTT technologies. The study also established that current ICT legislation and policy programmes need to be reviewed and amended to incorporate OTT technologies as the existing laws were designed for traditional electronic communications services. Furthermore, the National Integrated ICT Policy White Paper, 2016, specifies that at present, government should rather monitor the operations of OTT applications and not develop policy and guidelines for the services (Republic of South Africa, 2016a).

7.7.3 Objective 3: The role of government in the application and adoption of OTT communications services

The third objective of the study was to explore the role of government in the application and adoption of OTT communications services. The literature review confirmed that government has an important role in the development of policy and regulations for the management of OTT applications. The literature review also revealed various policy and regulatory approaches adopted by governments globally with regard to OTT applications. Governments can maintain the status quo and not develop regulatory guidelines for OTT applications. However, government could institute collaborative models among OTT providers and traditional network operators. Most importantly, the literature review emphasised that regulation ought to be enforced for authentic public policy purposes. Furthermore, the study disclosed various initiatives by the South African government in the application and adoption of OTT technologies. These are discussed below.

- **The broadcasting sphere:** ICASA has consulted with all role players with the intention of ascertaining the need to regulate OTT applications and review the Broadcasting Act, No. 4 of 1999.
- **The tourism sector:** The Department of Tourism has publicised its intent to review the Tourism Act, No. 3 of 2014, to incorporate Airbnb internet-based accommodation.
- **The transport sector:** The Department of Transport is currently reviewing the National Land Transport Act, No. 5 of 2009, to include the applications-based taxi services, Uber and Taxify.
- **The ICT sector:** The Parliamentary Portfolio Committee of Telecommunications and Postal Services public hearings on OTT services took place in 2016. Subsequently, government has decided to determine and monitor the operations of OTT applications.

7.7.4 Objective 4: Literature review on the application of OTT communications services

The literature review is a fundamental aspect of the study. It revealed various concepts applicable and fundamental to comprehending the research topic. The study clarified ICT, the Internet, electronic communications services, and more importantly, OTT

applications. The literature review revealed that globally there are numerous interpretations of the OTT concept, since OTT has no legal definition. This was also confirmed by the study results. Furthermore, the literature review revealed that many governments are reviewing their policies to align with and incorporate the new digital applications. The literature review in Chapter 2 disclosed that governments are reconsidering policy guidelines on net neutrality, taxation, big data, cloud computing, and security and protection of personal data. Brazil enacted a net neutrality law in 2014, Indonesia implemented taxation guidelines on OTT providers in 2017, and the European Union implemented data-protection guidelines in 2018. The study also explored the theoretical perspective on technology innovation and adoption through the diffusion of innovations theory. Furthermore, the theory of public interest revealed that policy and regulation development can have major benefits for society. However, the theory of economic regulation highlighted that the regulatory authority ought to operate independently without preference and regulatory capture.

7.7.5 Objective 5: Possible policy guidelines and regulatory recommendations

The fifth objective designed at providing possible policy and regulatory recommendations. The challenge of levelling the playing field cut across many sectors, such as the tourism and transport sectors, and not only the communications sector. Government is required to amend various pieces of legislation to include OTT technologies. These comprise the Broadcasting Act, No. 4 of 1999 and ECA Act, No. 36 of 2005. The researcher will deliberate in detail in the following section, as part of the recommendations, possible policy guidelines which can be effected in South Africa to regulate OTT applications.

7.8 Recommendations

The section below outlines possible policy programmes, strategies and regulatory plans which the government can effect and adopt, and apply to OTT communications services.

7.8.1 Development of taxation guidelines

Throughout the study, the challenge of taxation laws in respect of OTT applications was emphasised. South Africa and many other countries are challenged with instituting tax

regulation on OTT applications since OTT applications are borderless services. OTT providers are mostly foreign based; however, offer and operate their services across the globe. South Africa has amended the VAT Tax Act, No. 89 of 1991 to comprise broadcasting online electronic services (Republic of South Africa, 2019). The researcher therefore recommends that the law be reviewed further to incorporate taxation guidelines on OTT communications services, for example, Facebook and WhatsApp. Furthermore, the researcher recommends that government develop compressive taxation guidelines for the compliance management of all internet-based applications services, such as Airbnb, Uber and Taxify. According to the Commonwealth Telecommunications Organisation (2018), in the USA the government is in the process of remodelling and developing standardised descriptions for online digital content. Lessons can be learned from the European Union and the USA, where policy guidelines on Airbnb have been developed (Van Raalte et al., 2018).

7.8.2 Development of net neutrality guidelines

The literature review emphasised the importance of establishing a regulatory framework for online traffic management. Chapter 8 of the National Integrated ICT Policy White Paper (Republic of South Africa, 2016a) indicates that the Internet should be open to all authorised online content (Republic of South Africa, 2016a). For the same reason, the researcher commends that South Africa develop a comprehensive policy on net neutrality. Guidelines on net neutrality will promote efficient traffic management, since OTT applications have contributed to increasing data traffic. An objective net neutrality policy is essential for the country to confirm that traditional network operators are not biased towards the operations of OTT providers (Peha, 2006:2).

7.8.3 Development of online content security legislation

The dilemma of security for online digital content emerged throughout the study. The researcher recommends that the administration reinforce cyber security laws and develop a cybercrimes bill. The literature review revealed that several countries worldwide have established and strengthened laws to protect public data against cybercrime. South Africa needs to strengthen the prescripts of the Electronic Communications and Transactions Act, No, 25 of 2002, the Regulation of Interception of Communications and Provision of Communication-Related Information (RICA) Act,

No. 70 of 2002, the Protection of Personal Information (POPI) Act, No. of 2013, and the Cyber Crimes and Cybersecurity Bill, 2017. The amendment and review of legislation will support government initiatives to prevent and protect online illicit activities.

7.8.4 Collaboration guidelines

The study revealed that various network providers in the country have already established partnerships with OTT providers. These collaborations validate the significance of the authority to develop collaboration models for both OTT and traditional service providers. Therefore, government is required to ascertain the nature of these collaborations in terms of the law and intervene where necessary. This is to ensure that collaboration among OTT providers and traditional network providers adheres to national prescripts. All providers in the public and private sector should arrange collaborative mechanisms to accommodate OTT applications and mitigate disruptive online applications. All applications operate similarly through the Internet, despite some being in the broadcasting, tourism, and transport sectors, as revealed in the literature review.

7.8.5 Future-oriented light-touch policy

The country should develop ICT policy guidelines that are future oriented. The administration needs to have an understanding of global ICT developments to align and remodel policies (Hanna, 2018:4). The researcher therefore recommends that a light-touch policy be instituted for OTT applications, as the study disclosed that such a policy option is practicable and not stringent. Authorities need to develop regulations that will stimulate competition, rather than stringent regulations that will harm the ICT sector (*Digital Policy*, 2015).

7.8.6 Definition of the OTT concept

One significant aspect which authorities should resolve as soon as possible is the definition of OTT communications services. Resolving the definition of OTT will stimulate effective operations in the ICT sector, since both OTT and traditional network providers offer similar or comparable services.

7.8.7 Further studies

Lastly, as indicated in Chapter 5 on the limitations of the research: the study could have incorporated the providers of disruptive technologies in the tourism, transport, and e-commerce sectors. The researcher thus recommends further research on the topic of OTT communications services. Further research is required, as there was a paucity of literature on the topic, particularly for South Africa.

7.9 Conclusion

The applications economy has improved ordinary ways of doing things. Uber, Taxify, Airbnb, WhatsApp and Facebook have simplified everyday life and have enabled citizens to communicate and access information in a novel way. However, as the study has indicated, it cannot be a 'free for all' kind of a situation. Numerous countries across the globe are deliberating on appropriate policies and regulations for OTT technologies. India is currently conducting studies to assess the best approaches to ensure ICT accommodates all providers in the market (Bhawan, 2015). South Africa needs to review the management of the online digital economy. The literature review emphasised that when the ICT sector is unregulated, the economy can yield unintended consequences (Gillward et al., 2012).

South Africa needs to develop policies to manage big data, cloud computing, and cybersecurity, as the study has highlighted the importance of new strategies for the digital era. The authorities should conduct studies, observe, and participate in international forums to comprehend the role of government in the adoption and implementation of the applications economy (Hanna, 2018:15). Although OTT applications challenge government, the study has proved that ICT is a significant driver of internet development and socio-economic transformation. The study emphasised the significant role of the Internet in improving the socio-economic status of communities. Ordinary South Africans thus need access to OTT communications services. The theory of public interest and the theory of economic regulation can serve as points of reference in supporting the administration to develop policies that will benefit the public. OTT applications have been adopted by general public , since their services have changed livelihoods as revealed in the study. Hence it is imperative for the authorities to develop policies in accordance with national and international policy programmes.

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Appendices

Appendix A
Notification to conduct study

P. O. Box 39021
Fearie Glen
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0043

Ms. Mameetse Masemola
Acting Deputy Director General
Department of Telecommunications and Postal Services
IParioli Office Park
399 Jan Shoba Street
Hatfield
Pretoria
0001

Email: MMasemola@dtps.gov.za

Re: Notification of Master's Degree Research

I Adelaide Masemola hereby, notify the Department of Telecommunications and Postal Services on my intention to conduct a study, as part of my Master's Degree in Public and Development Management.

The title of my research is: Assessing the need for Policy and Regulation of Over- the -Top communication services in the ICT sector in South Africa. This project will be conducted under the Supervision of Ms. Naomi Burger, Stellenbosch University.

As an employee of the Department of Telecommunications and Postal Services, it is my responsibility to report to the Department on this project.

Upon completion of the study I will ensure that I provide the Department with a copy of the full research report.

Yours sincerely

Ms. Adelaide Masemola
Director: Economic Policy Analysis

20-03-2018

Appendix B
Respondents and Organisations

Respondents	Organisation	Area of work
Respondent A	Competition Commission	Principal economist
Respondent B	Department of Telecommunications and Postal services	ICT policy and legislation specialist
Respondent C	Department of Communications	Broadcasting policy and legislation specialist
Respondent D	ICASA	Policy and research analyst
Respondent E	MultiChoice	Specialist policy analysis and research in regulatory affairs
Respondent F	MTN	Legal and regulatory expert
Respondent G	Cell C	Regulatory affairs expert
Respondent H	Google	Public policy and government relations expert
Respondent I	Facebook	Public policy analyst
Respondent J	WhatsApp	Connectivity and access policy specialist
Respondent K	Internet Service Providers Association	Regulatory affairs advisor
Respondent L	Telkom	Pricing compliance and regulatory economist
Respondent M	Vodacom	Technical regulatory affairs specialist
Respondent N	Vodacom	Technology regulation specialist
Respondent O	Student (University of Pretoria)	LLB student
Respondent P	Student (University of Pretoria)	Public Administration student

Appendix C

Semi-structured interviews for OTT communications services

Question 1: Is it premature for South Africa to develop a regulatory and policy framework for OTT communications services, since internet access and penetration are still evolving?

Question 2: Should Government and the regulatory authority develop a legislative or regulatory outline that can accommodate and adapt to technology changes?

Question 3: Do you agree that there is regulatory imbalance between traditional network operators and OTT providers? (i) How can the current legislative framework be applied to OTT services? (ii) What can be a suitable legislative framework to address both OTT providers and network operators?

Question 4: Should OTT providers be subjected to a licensing regime in their country of origin or in countries in which they operate?

Question 5: Should Government force OTT providers to reimburse network providers for the use of their infrastructure?

Question 6: What are the opportunities and effects associated with the emergence of OTT communications services for South Africa? (i) Do you think OTT communications services bring any harm to the South African fiscus, since they are not paying any taxes for their operations? (ii) What could be the impact on the economy?

Question 7: Would it be difficult to regulate OTT communications services since they have no legal definition?

Question 8: Will regulation have an effect on technology innovation and therefore curtail competition in the ICT sector?

Question 9: Have there been security concerns for the country as OTT communications services are not regulated? (i) If yes, how should Government address those security concerns? (ii) For OTT providers residing outside South Africa, how can Government ensure that they comply?

Question 10: Do OTT communications services promote or stimulate demand for data in South Africa?(i) If yes how? (ii) If no how?

Question 11: What is your view on traffic management practices? Are there reasonable or consistent approaches, especially relating to OTT providers?

Question 12: Is there been a need for changes to the tariff regulatory framework for communications services since the emergence of OTT communications services?

Question 13: What is in the best interest of South African consumers since the evolution of OTT communications services?

Question 14: State any other negative or positive effects of OTT communications services that would need Government intervention, not referring to the above questions.

Question 15: Are there any other issues which might have a bearing on the subject discussed?